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A REVISION OF THE SUB-GENUS *SOLANDRA* OF *CENTELLA*.

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While the genus Centella is widespread especially in tropical and subtropical regions, its subgenus *Solandra* is confined to South Africa and to the south and west coastal belt there. The greatest concentration of species is in the winter rainfall area of the Cape Province.

Centella is a genus closely related to *Hydrocotyle*, and previous to 1878 was usually regarded as forming a part of that genus. Urban (Mart. Fl. Bras. 11.1. 286. 1878) was the first to separate it with a satisfactory diagnosis. His recognition of *Centella* as a distinct genus has been generally followed since (e.g. Drude in Engler & Prantl Nat. Pflanzf. 3.8. 119. 1898; Della Torre & Harms, Gen. Siphonog. 1. 364. 1907; Domin, Bot. Jahrb. 41. 155. 1908; etc.).

The South African species have been studied previously by Chamisso & Schlechtendal (Linnaea 1. 367. 1826), by Sonder (Fl. Cap. 2. 526. 1862) and by Domin (Bot. Jahrb. 41. 155. 1908). In addition Ecklon & Zeyher (Enum. 330. 1837) described a number of species some of which are recognized as valid. All these accounts were based upon somewhat scanty dried material and necessarily resulted in the retention of a number of aggregate groups. Chamisso & Schlechtendal, indeed, came to the conclusion that these groups were not possible of satisfactory division into definable units. Later authors (e.g. De Candolle Prodr. 4. 68–70. 1830, and Sonder (l.c.)) have gone further but with results that can not be regarded as satisfactory. Even the latest, Domin (l.c.) has followed Sonder's scheme very closely though the species are transferred to *Centella*.

More intensive field work, and especially investigation on the higher mountain ranges, together with a study of living plants, has made possible a resolution of some of the previously accepted aggregates and has brought to light a number of new species. In this connection especial tribute must be paid to the collections of Miss E. Esterhuysen of the Bolus Herbarium, which have produced several novelties.

Within South Africa Sonder recognized 15 species, Domin 16, whereas the number is now raised to 38. It is almost certain that even this number will be further increased when more intensive collecting on the more remote mountain ranges is undertaken. There are in collections a number of specimens which cannot be assigned to any of the recognized species but of which material is insufficient for adequate description.

In the present account, in addition to the author's own collections, material from the following herbaria has been examined:—

Bolus Herbarium, University of Cape Town.
Dept. of Botany, University of Cape Town.
S. African Museum, Cape Town.
National Botanic Gardens, Kirstenbosch.
National Herbarium, Pretoria.
Albany Museum, Grahamstown.
Royal Botanic Gardens, Kew.
British Museum (Nat. Hist.), London.
Linnaean Herbarium, London.
Nat. Histor. Riksmuseet, Stockholm.
Bot. Museum, Lund.

Unless otherwise stated, the type specimens of new species or varieties have been deposited in the Bolus Herbarium, Cape Town.

CENTELLA.

L. Pl. Rar. Afr. 28. 1760; Amoen. Acad. 6. 112. 1764. *Emend.* Urban in Mart. Fl. Bras. 11.1. 286. 1878. **Solandra** L. Syst. Veg. ed. 8. 1269. 1759. **Glyceria** Nutt. Gen. Amer. 1. 177. 1818. *non* R. Br. **Chondrocarpus** Nutt. l.c. (in corrig.). **Hydrocotyle** subgen. **Centella** Benth. & Hook. Gen. Pl. 1. 873. 1862.

Perennial herbs, sometimes woody. Stems usually with long and short internodes and the leaves in groups of 2, 3 or more. Leaves simple, the sheaths without stipule-like extensions. Umbels simple, axillary, with 1 to many, most commonly 3, rays. Flowers bisexual and male, solitary on the rays or the male in groups of 3. Male and bisexual flowers in the same or in separate umbels, in the latter case on the same or less commonly on different plants. Involucre 2—4-leaved, involucel of 2 or 4 bracts, persistent at the fruiting stage. Petals imbricate, often incurved. Fruit most often flattened or compressed, without vittae. Mericarps with 7—9 ridges, the commissural as large as the others, the furrows often wrinkled.

The type species is *C. asiatica* (L.) Urban.

In its modern connotation the genus dates from the emendation made by Urban (l.c.) but the name was first used by Linné in 1760 who created the genus for two species, *C. villosa* and *C. glabrata*. Linné however, gave an unsatisfactory and incorrect diagnosis, placing the genus in *Monoecia Tetrandria*. Linné's genus is itself antedated by *Solandra* L. founded in 1759 for the single species *S. capensis*, which was placed in *Monoecia Pentandria*, and which also had an incorrect diagnosis. Linné the younger submerged both these genera in *Hydrocotyle* and his scheme was followed until 1878.

While strict adherence to the International Rules might suggest that the name *Solandra* should replace *Centella*, such a change would be entirely against general usage. *Solandra* has never been correctly diagnosed, and it has never been taken up for the Umbelliferae. Even when a subgenus or section was made in *Hydrocotyle* the name *Centella* was used (e.g. Benth. & Hook. Gen. Pl. 1. 873. 1862; DC. Prodr. 4. 68. 1830). *Solandra* is not mentioned as a genus of Umbelliferae by Steudel (Nom. Bot. ed. 2. 1845). It has, however, been taken up for quite other plants, e.g. Murr. Comm. Gott. 6. 20. 1785 (=*Hibiscus*), Swartz Vet. Akad. Handl. Stockh. 8. 300. 1787 (=*Swartzia*). The case for the adoption of *Centella* rather than *Solandra* has been fully set forth by Domin. (Bot. Jahrb. 148–152. 1908) and needs no repetition.

KEY TO THE SUBGENERA

1. Umbels pedunculate, with 2 or more bisexual flowers; leaf blades reniform, usually cordate .. .. 1. *Trisanthus*

1. Umbels usually sessile, with only 1 bisexual flower .. .. 2. *Solandra*

The connotation of these subgenera which were founded by Drude (l.c.) has been altered somewhat. Drude laid stress on leaf form and habit. He included in the subgenus *Trisanthus* a group of species which have reniform cordate leaves but sessile umbels with only one bisexual flower. In the latter features these species agree with the subgenus *Solandra* and are now transferred thereto. This plan which lays stress on the umbel characters rather than the vegetative ones seems a more natural one. It is one which is supported by the geographical distribution. As now recognized the subgenus *Solandra* is wholly South African while *Trisanthus* is widespread with one species in South Africa. On Drude's division *C. villosa* forms a transition between the subgenera, as revised the two are quite distinct.

Subgen. **Trisanthus.**

Drude in Engler & Prantl Nat. Pflanzr. 3.8. 119. 1898 (*emend.*): *Trisanthus* Lour. Fl. Cochin. 175. 1790 (pro gen.).

Herbs. Leaves petiolate with rounded or reniform obtuse cordate blades. Umbels usually solitary, pedunculate, each with 2 or more bisexual flowers.

The aggregate species *C. asiatica* (L.) Urban has recently been divided into a number of species. Of these segregate species only one has been discovered within the area.

1. **C. coriacea** Nannfd. Svensk. Bot. Tidsk. 18. 404. 1924. *C. asiatica* (L.) Urban Mart. Fl. Bras. 11.1. 287. 1878 *p. pte. Hydrocotyle asiatica* L. Sp. Pl. 234. 1753. *p. pte.*

Glabrous or glabrescent, less often hairy. *Stems* prostrate, branched, usually rooting at the nodes, up to 30 cm. long. *Leaves* solitary or in groups of 2—3, separated by long internodes, petiolate: blades firm, rotund or semicircular, cordate or truncate at the base, more or less crenate, 1—4 cm. long, 1—5 cm. wide: petioles 1—10 cm. long. *Umbels* pedunculate, solitary or in groups: peduncles hairy, 0·5—5 cm. long, shorter than the petioles. *Involucral bracts* 2, membranous, obtuse. *Flowers* 1—5, subsessile, all bisexual. *Petals* glabrous, usually reddish. *Anthers* pale, red or purple, rotund, notched at the tip. *Fruit* 3—4 mm. wide, usually wider than long, the mericarps slightly swollen, brown, wrinkled, longer than the bracts.

The type is *Bachmann* 833 in herb. Berol.

Very variable in size and in the shape and toothing of the leaves, also in the length of the peduncles. The varieties described do not seem more than habitat forms.

Damp places especially where shaded. Common and widely distributed. Throughout the coastal belt and extending throughout the Union.

CAPE. Table Mt., *Burchell* 17; *Froembling;* Mowbray, *Guthrie* 941; Rondebosch, *Adamson* 4026; *Wolley-Dod* 964; 2024: Newlands, *Marloth* 1620; Claremont, *Schlechter* 272; Kirstenbosch, *Adamson* 751; *Barker* 5250; *Compton; Hall* 3; Sand Vlei, *Adamson* 786, 1691; Muizenberg, *Marloth* 3973; Simonstown, *Wright;* S. Peninsula, *Adamson* 912, 3329; *Salter* 2068. STELLENBOSCH. Somerset West, *Parker* 2088; Jonkershoek, *Adamson* 4060. PAARL. Paarl, *Drege.* CALEDON. Elgin, *Adamson* 4274, 4275; Sondereinde, *Adamson* 4388. SWELLENDAM. Voormansbosch, *Ecklon & Zeyher.* RIVERSDALE. Albertinia, *Muir* 850. HERBERTSDALE. Cloete's Pass, *Adamson* 4341. GEORGE. George, *Michell* 16091. KNYSNA. Deepwalls, *J. Phillips* 129; Gouna, *Wall* 2214 18; Prince Alfred Pass, *Fries, Norlindh & Weimarck* 1640. HUMANSDORP. Slang Rust, *E. P. Phillips* 3436. SOMERSET EAST. Boschberg, *MacOwen* 942; Somerset East, *Bolus* 316. UITENHAGE. Uitenhage, *Burchell* 4441; *Ecklon & Zeyher* 483, 2155; *Wallich*· Bethelsdorp, *Fries, Norlindh & Weimarck* 287. PORT ELIZABETH. Port

Elizabeth, *Fries, Norlindh & Weimarck* 76. STEYNSBURG. Zuurberg, *Schonland* 3206. STUTTERHEIM. Amabele, *Acock* 9482. VICTORIA WEST. Woburn, *Acock* 11903. KENTANI. Kentani, *Pegler* 1487. KOMGHA. Komgha, *Flanagan* 1187. HAY. Groot Doorn, *Burchell* 1907; Daniels Kuil, *Wilman* 1329. KIMBERLEY. Kimberley, *A. M. Paton*. VRYBURG. Taungs, *Bruechner* 1231. NATAL. Port Shepstone, *Galpin* 11440; Alexandria, *Rudatis* 1042; Umzimkulu, *Adamson* 4229; Richmond, *Galpin* 12006; Pietermaritzburg, *Dyer* 4770; Durban, *O. Kuntze; Schlechter* 2854; Claremont, *Schlechter* 3090; Greytown, *Wood* 4301; Inanda, *Wood* 839, 839a; Estcourt, *O. West* 1826; Ngongoni, *Acock* 11816. BASUTOLAND. Leribe, *Dieterlen* 619. TRANSVAAL. Belfast, *Burtt-Davy* 1273; Benoni, *R. D. Bradfield* 443; Boksburg, *P. Murray;* Potchefstroom, *W. G. Louw* 1561; Waterberg, *Galpin* 133117; Naboomspruit, *Galpin* 695, M.158; Sabie, *V. Wager* C.10; Zoutpansberg, *O.V.S.* 225. BECHUANALAND. Groot Kuil, *Marloth* 1510. S. RHODESIA. Umtali, *F. Eyles*. Inyanga, *Fries, Norlindh & Weimarck* 3673, 3881, 3939, 3971.

Sub-genus 2. **Solandra.**

Drude in Engler & Prantl Nat. Pflanzf. 3.8. 119. 1898 (*emend.*) *Solandra* L. Syst. Veg. ed. 8. 1269. 1759 (pro. gen.).

Herbs, often woody at the base, or sometimes shrubby. Leaves usually petiolate. Umbels usually sessile, often aggregated, each with only 1 bisexual flower. Mericarps with 7—9 usually small ridges.

The subgenus as created by Drude has been extended to include all the species with only 1 bisexual flower in the umbel.

KEY TO THE SERIES

1. Leaf blades cordate or truncate at the base, the veins diverging from the top of the petiole.
    2. Leaves toothed, obtuse, about as wide as long .. .. 1. *Erianthae*
    2. Leaves entire, acute, usually longer than wide .. .. 2. *Villosae*
1. Leaf blades cuneate at the base, not cordate.
    3. Basal or all the leaves toothed.
        4. Involucral bracts as long as and enclosing the rays of the umbel .. .. 3. *Capenses*
        4. Involucral bracts shorter than the rays .. .. .. 4. *Montanae*
    3. Leaves or most of them entire.
        5. Leaves broadly cuneate at the base, usually oblique .. 2. *Villosae*
        5. Leaves narrowly cuneate at the base, usually symmetrical.
            6. Leaves flat or occasionally rolled: umbels commonly on lateral branches .. .. 5. *Glabratae*
            6. Leaves terete or if flat very narrow: umbels on the main shoots .. .. 6. *Virgatae*

Series 1. **Erianthae.**

Saepissime pilosae. *Caules* basi lignosi procumbentes. *Folia* petiolata laminis reniformibus vel rotundatis quot latis tot longis saepissime obtusis, marginibus dentatis, nervis radiatis. *Umbellae* sessiles, radiis elongatis, flore unico fertile ceteris masculis. *Fructus* complanatus.

KEY TO THE SPECIES

1. Leaf edge with large triangular teeth: bracts distinctly longer than the fruit.	
2. Densely hairy: leaves many-toothed: fruit not wider than and enclosed by the bracts	6. *flexuosa*
2. Thinly hairy: leaves with 3—9 large teeth: fruit distinctly wider than the bracts..	7. *hederaefolia*
1. Leaf edge crenate, dentate, or almost entire, the teeth shallow or very narrow.	
3. All the leaves distinctly cordate.	
4. Leaves smooth, concolorous: fruit distinctly ribbed..	4. *laevis*
4. Leaves rugose, dark above, paler below: fruit wrinkled, with small ridges.	
5. Petioles glabrescent, longer than the blades: bracts about as long as the fruit	2. *eriantha*
5. Petioles densely villous, not longer than the blades: bracts longer than the fruit	2. *eriantha* var. *rotundifolia*
3. Upper leaves truncate or very widely cordate at the base.	
6. Leaves not rugose, thin, with sharp acute marginal teeth: bracts glabrous, shorter than the fruit ..	3. *calliodus*
6. Leaves rugose, firm, with rather shallow teeth.	
7. Glabrous or glabrescent: stems herbaceous: leaves not coriaceous: bracts longer than the fruit, usually glabrous	2. *eriantha* var. *orientalis*
7. Woolly, at least when young: stems woody: leaves coriaceous: bracts shorter than the fruit, woolly	5. *lanata*

2. **C. eriantha** (Rich.) Drude in Engler & Prantl Nat. Pflanzf. 3.8. 1191. 1898. *Hydrocotyle eriantha* Rich. Mon. Gen. Hydroc. 18. 1820. *H. reniformis* Spreng. Neu Entdeck. 1. 382. 1821. *H. cuspidata* Willd. in Schult. Syst. 6. 396. 1828. *H. asiatica* Thunb. Fl. Cap. ed. Schult. 252. 1823. *non* L.

A more or less glabrescent prostrate or sprawling herb with slender stems woody in the oldest parts only. *Stems* usually with long internodes, the leaves in groups. *Leaves* glabrescent: blades rotund or reniform, usually deeply cordate, obtuse, 1—3 cm. long, 1·3—4 cm. wide, darker above, paler below, the margins crenate, dentate or almost entire, sometimes slightly lobed, the teeth obtuse, acute or mucronate, occasionally hooked: veins depressed above, prominent below, usually 7, less often 5 or 9, radiating from the top of the petiole, the median not larger than the others: petioles usually hairy, 1—8 cm. long: sheaths hairy. *Umbels* sessile, 3-rayed, but often closely aggregated and apparently many-rayed: rays slender, up to 2 cm. long, hairy or less often glabrous. *Petals* glabrous. *Fruit* orbicular-obcordate, 3—4 mm. long, 3·5—4·5 mm. wide, the mericarps wrinkled, with distinct but not prominent ridges. *Bracts* 2, thin, hairy but glabrescent, as long as the fruit or half its length.

Damp sheltered places on mountains, especially by waterfalls. Throughout the S.W. districts and extending to Natal.

Very variable in leaf-size, the nature of the leaf edge, and in the degree of hairiness; var. *glabrata* Sond. Fl. Cap. 2. 528. 1862. cannot be upheld.

CAPE. Table Mt., *Adamson* 613, 1624, 1625; *Bolus* 4506; *L. Bolus; Burchell* 639; *Compton* 14072; *Drege; Ecklon* 404: *Ecklon & Zeyher* 2157; *Esterhuysen* 34; *Marloth* 123; *Prior.* Devil's Peak, *Prior;* Orange Kloof, *Wolley-Dod* 251. 1002; Noordhoek Mts., *Michell; Salter* 272/4; Muizenberg, *Adamson* 1262, 2312; Kalk Bay Mts., *Adamson* 958; Simonstown, *Adamson* 2367; *Schlechter* 322. STELLENBOSCH. Stellenbosch, *Drege;* Hottentots Holland, *Ecklon & Zeyher* 2158; Lourensford, *Parker* 3936. CALEDON. Somerset Sneeuwkop, *Esterhuysen* 2598: Hangklip, *Compton* 13511: Palmiet Riv., *Andreae* 862; Klein Riv. Mts., *Guthrie* 4125; Houwhoek, *Adamson* 4246: Sir Lowry Pass, *Hafstrom.* PAARL. Franschhoek Pass, *Esterhuysen* 1887; *Barker & Esterhuysen*· Berg River Hoek, *Salter* 6876. WORCESTER. Worcester Mts., *Drege* 1838; *Ecklon & Zeyher.* ROBERTSON. Langeberg, *Levyns* 5507. RIVERSDALE. Langeberg, *Bolus* 11293. GEORGE. George, *Prior.* KNYSNA. Melkhoutskraal, *Burchell* 5369. UNIONDALE. Lourie Plantation, *Dix* 148. HUMANSDORP. Witelsbosch, *Fourcade* 820. UITENHAGE. Van Stadensberg, *Bolus* 1613. PORT ELIZABETH. Port Elizabeth, *F. R. Long* 251. ALBANY. Grahamstown, *Daly & Sole* 499. NATAL. Claremont, *Schlechter* 272. Without exact locality. *Ecklon* 239; *Sparrman*; *Thunberg*; *Zeyher.*

var. **orientalis** var. nov.

A typo differt:—caulibus suberectis vel diffusis, foliis subcoriaceis superioribus basi truncatis vel latissime cordatis, umbellis 4—6 radiatis, fructibus bracteis distincte brevioribus.

More erect. *Leaves* firmer, very slightly rugose, the upper truncate at the base, usually acutely dentate at the edge. *Umbels* aggregated. *Fruit* distinctly shorter than the bracts.

GEORGE. George, *Prior;* Outeniqua Mts., *Rehmann* 270. KNYSNA. Concordia, *J. D. Keet* 598; *The* Glebe, *Galpin* 4092. HUMANSDORP. Assegaibosch, *Rogers* 2847; Witelsbosch, *Esterhuysen* 6795; Riet Vlei, *Esterhuysen* 6612; Clarkson *Thode* A.846. UITENHAGE. Van Stadens Riv. *F. R. Long* 626. ALBANY. Grahamstown, *Rennie* 282 (*type*, in Herb. U.C.T.); *Thode* A.846.

var. **rotundifolia** var. nov.

A typo differt:—caulibus prostratis intricatis sublignosis junioribus dense villosis, foliis rotundatis rugosis supra laete viridibus infra pallidis villosis nervis prominentibus, inferioribus basi profunde cordatis superioribus saepe truncatis, petiolis dense villosis laminas aequantibus vel paulo superantibus, umbellis radiis villosis, bracteis fructibus paulo longioribus.

A variety distinct in the habit with prostrate much branched stems forming close patches. *The younger parts, petioles and umbels* densely white-villous. *Leaf blades* rotund, very rugose, dark green above, pale below, the lower deeply cordate with the edges overlapping, the upper widely cordate or even truncate. *Fruit* slightly shorter than the villous acuminate bracts.

On rocks on the crest of the Potteberg range and on mountains near George.

SWELLENDAM. Potteberg, *Adamson* 4303 (type), 3784. GEORGE. Outeniqua Mts., *Paterson* 1202.

3. **C. calliodus** (Cham. & Schl.) Drude in Engler & Prantl Nat. Pflanzr. 3.8. 119. 1898. *Hydrocotyle calliodus* Cham. & Schlecht. Linnaea 1. 371. 1826.

A slender almost glabrous sprawling or scrambling herb. *Stems* with long internodes, often slightly hairy at the nodes. *Leaves* in groups, often on short shoots: blades thin, palish green, reniform or semicircular, or the lower rotund, usually wider than long, 0·8—3·5 cm. wide, 1·3—3 cm. long, truncate or very widely cordate at the base, concolorous, smooth, with 5, less often 7, radiating veins: veins not depressed above, not or very slightly raised below, the median usually larger than the others: edges dentate or serrate, the teeth mucronate, often long and very narrow, sometimes curved: petioles up to 8 cm. long, almost or quite glabrous: sheaths usually slightly hairy, with obtuse lobes at the top. *Umbels* 3-rayed but often closely approximated, the rays slender, usually slightly hairy. *Flowers* with 4 acuminate bracts. *Petals* glabrous. *Fruit* orbicular, flattened, 3·5—4·5 mm., long 2·5—6 mm. wide, slightly wrinkled, about twice as long as the acuminate bracts. Fruit on a slender usually deflexed ray up to 3 cm. long.

Dripping rocks and sheltered swamps throughout the coastal belt.

Allied to *C. eriantha* but distinguished by the habit, the pale smooth 5-veined leaves with narrow sharp teeth and a truncate base, also by the less ridged fruit with acuminate bracts. Two forms are found which appear rather different but which are connected by all stages of intermediate. The one which occurs at the higher levels, has small leaves not over 2·5 cm. wide with deep marginal teeth, and small fruits about 2·5 mm. wide. The other which is found at lower levels, has larger leaves at least 3 cm. wide which are less deeply toothed, and larger fruits, 3·5—6 mm. diam.

CERES. Cold Bokkeveld, *Adamson* 4296, 4297, 4299. WORCESTER. Worcester, *Rehmann* 2457; Bain's Kloof, *Adamson* 3566, 4383, *Compton* 4169; Du Toit's Kloof, *Drege*. PAARL. Franschhoek Pass, *Adamson* 4085; *Compton* 8164: *Levyns* 4175; Berg River Hoek, *Adamson* 4405; *Compton* 8333; Wemmershoek, *Esterhuysen;* Paarl Mt., *Bunbury; Drege.* STELLENBOSCH. Banhoek, *Stokoe·* Jonkershoek, *Adamson* 3961, 3995, 4066. CALEDON. Hangklip, *Compton* 13540; Palmiet River, *Levyns* 6320; Onrust, *Esterhuysen* 4905; Genadendal, *Ecklon & Zeyher* 2159; *Schlechter* 9867; *Prior;* Paardekop, *Stokoe;* Sondereinde Mts., *Thorn.* SWELLENDAM. Swellendam, *O. Kuntze;* Clock Pks., *Adamson* 3824; *Ecklon & Zeyher* 2159: Buffelsjaagts Riv., *Burchell* 7285; Voormansbosch, *Zeyher* 2663. RIVERSDALE. Garcias Pass, *Schlechter* 1941; Hermans Hoek, *Muir* 396. GEORGE. George, *Bowie*.

Without exact locality:—*Lehmann, Wallich, Zeyher* 2158.

4. **C. laevis** sp. nov. *Hydrocotyle eriantha* var. *glabrata* Sond. F. Cap. 2. 528. 1862. *p. pte.*

Glabrescens. *Caules* suberecti basi lignosi, juvenales villosi. *Folia* reniformia vel rotundata, cordata, crenata vel dentata, laevia, concoloria, nervis supra non depressis, infra vix prominentibus, petiolis glabrescentibus, vaginis subauriculatis. *Umbellae* 3—6 radiatae seapissime separatae, radiis sparse villosis, fructiferis tandem elongatis deflexis. *Fructus* orbicularis vix reticulatis, bracteis aequaelongus vel paulo brevior, mericarpiis jugis subprominentibus.

Allied to *C. eriantha* but larger, usually more erect, and glabrescent except for the coarsely villous youngest parts. *Leaves* smooth, not rugose, almost concolorous, the 7—9 radiating veins forming a network but not depressed above nor prominent below: blades 2—5 cm. long, as wide or wider: petioles 3—10 cm. long. *Umbels* usually solitary. *Fruit* orbicular-obcordate, 3—4 mm. wide, with rather distinct ridges but not or very slightly wrinkled. Fruit on a ray 2—3 cm. long and usually deflexed. *Bracts* acute as long as the fruit or longer, rarely shorter.

River banks and swamps in the southern coastal belt.

CAPE. Orange Kloof, *Guthrie* 1332. STELLENBOSCH. Lourens River, *Parker* 696; Jonkershoek, *Adamson* 3659, 3658; Sir Lowry Pass, *Adamson* 4038 (type). CALEDON. Palmiet Riv., *Mundt; Adamson* 4379; Highlands, *Adamson* 4277; Mossel River, *L. Guthrie;* Sondereinde River, *Adamson* 4387. SWELLENDAM. Potteberg, *Adamson* 3909, 4319. ALBANY. Grahamstown, *MacOwan* 989. Without exact locality:—*Wallich.*

5. **C. lanata** Compton in Kew Bull. 6. 259. 1934.

Prostrate or sprawling. When young covered with dense white or brown woolly hairs, later more or less glabrescent. *Stems* up to 40 cm. long, firm, woody in the lower parts, usually with long internodes. *Leaves* solitary or in groups of 2 or 3: blades coriaceous, reniform, usually wider than long, 1—2 cm. long, 1·5—3 cm. wide, widely cordate or truncate at the base, rugose, not distinctly paler below, the veins slightly depressed above and projecting below, the edges shallowly crenate or dentate: petioles up to 4 cm. long: sheaths with projecting lobes. *Umbels* 3—6 rayed, the rays densely tomentose, 0·4—1 cm. long. *Male flowers* in groups of 2 or 3. *Petals* with a few hairs on the back. *Fruit* orbicular or obcordate, 3—4 mm. long, 3·5—5 mm. wide, pale brown, wrinkled, longer than the acuminate tomentose bracts.

Mountains from Swellendam to Humansdorp.

Readily recognized by the woody stems, coriaceous rugose leaves with a truncate or widely cordate base, and the woolly umbels and young parts.

SWELLENDAM. Voormansbosch, *Pappe; Zeyher* 2661; *Zeyher* (s.n.); Zuurbraak Peak, *Adamson* 4023; Lemoenshoek Peak, *Adamson* 3876: *Esterhuysen* 10439: Langeberg in Heidelberg. *Esterhuysen* 38281. RIVERSDALE. Garcias Pass. *Levyns* 3880: *E. P. Phillips* 319: Campscheberg, *C. Thorn;* Langeberg, *Muir* 109. UNIONDALE. Formosa Peak, *Compton* 4235 (*type* in herb. Kew); Helpmekaar Peak, *Esterhuysen* 4612.

6. **C. flexuosa** (E. & Z.) Drude in Engler & Prantl Nat. Pflanzf. 3.8. 119. 1898. *Hydrocotyle flexuosa* Eckl. & Zeyher Enum. 331. 1837.

Densely covered all over with white, grey or rusty short spreading hairs. *Stems* sprawling, woody at the base only. *Leaves* clustered: petioles up to 10 cm. long: blades cordate, acute 1—2 cm. long, 1—2·5 cm. wide, the edges with large triangular shortly mucronate teeth about 2 mm. deep and 3 mm. wide at the base: sheaths obtuse, with a broad membranous edge. *Umbels* 3-rayed. *Petals* slightly hairy on the back. *Fruit* pale-coloured, orbicular, about 4 mm. long and wide, not wrinkled but with distinct ridges, enclosed by 2 woolly acute or acuminate bracts 7 mm. long and 4—5 mm. wide at the base. Fruit on a ray 2—3·5 cm. long, often deflexed.

Rocks on the upper parts of mountains in the south-west.

Variable in colour. While most generally the fruit is enclosed by the bracts, in some specimens (e.g. *Esterhuysen* 17681) which are otherwise identical, the fruit is distinctly wider than the bracts.

CAPE. Simonstown Mts., *Adamson* 1767. STELLENBOSCH. Hottentots Holland. *Esterhuysen* 2675: *Stokoe* 8995: *Zeyher* 2662: Jonkershoek, *Adamson* 3866, 3994, 3997. CALEDON. Somerset Sneeuwkop, *Esterhuysen* 2599; Sir Lowry Pass, *Bolus* 138; *MacOwan* 138; *Schlechter*

4831; Steenbras, *Burchell* 8222; Elgin, *Compton* 6421; Palmiet River, *Ecklon & Zeyher* 2160 (type). PAARL. Franschhoek Pass, *Esterhuysen* 2807; *Leighton*: *Schlechter* 3259, 9259; Berg River Hoek, *Compton* 13831; Wemmershoek Tafelberg, *Esterhuysen* 17681. Without exact locality:—*Ecklon* 2160; *Ecklon & Zeyher; Mundt.*

A specimen (*Ecklon & Zeyher* 59.7) stated to have been collected at "Kei River, Tembukiland" is this species but there would seem to be a mistake in the locality.

7. **C. hederaefolia** (Burch.) Drude l.c. *Hydrocotyle hederaefolia* Burch. Trav. 1. 46. 1822. *H. macrodus* Spreng. Syst. 1. 877. 1825. (Neu Entdeck. 2. 292. 1821 (*nomen nudum*)). *H. moschata* Spreng. in Schult. Syst. 6. 351. 1823. *non* Thunb. *H. septemloba* Schinz in Bull. Herb. Boiss. 3. 410. 1895.

Diffuse or sprawling in low patches. Thinly covered all over with long spreading hairs. Underground part of the stem woody, the aerial very slender, much branched. *Leaves* with ivy-like blades 0·8—1·5 cm. long and about the same in width, more or less cordate, the edges with 3—9 large triangular teeth: petioles very slender, up to 5 cm. long: sheaths with a broad scarious edge. *Umbels* 3-rayed, the rays much shorter than the leaves. *Petals* hairy. *Fruit* obcordate, not much flattened, 3—4 mm. long, 3·5—4·5 mm. wide, wrinkled, distinctly wider but much shorter than the acute hairy bracts. Fruit ray about 1·5 cm. long.

Rock crevices on mountain tops. Endemic to the Cape Peninsula.

Allied to *C. flexuosa* and distinguished chiefly on vegetative features. *H. septemloba* was stated to have tomentose fruits but differs in no other feature and cannot be maintained.

CAPE. Table Mt., *Acock* 2717, 6587; *Adamson* 612; *Burchell* 658 (type in Herb. Kew); 659; *Compton; Dümmer; Ecklon* 407; *Ecklon & Zeyher* 2161; *Mundt;* Vlaggenberg, *Adamson* 1750, 1751; *Salter* 1903; Constantiaberg, *Adamson* 2418; *Schlechter* 878 (type of *H. septemloba*); Simonstown Mts., *Schlechter* 372; Wright; Miller's Point, *Wolley-Dod* 2894. Without exact locality:—*Ecklon; Masson; Robertson.*

Series 2. **Villosae.**

Herbae procumbentes caulibus basi tantum lignosis, saepissime dense hirsutae. *Folia* petiolata integra acuta longiora quam lata, basi cordata vel inaequaliter truncata. *Fructus* complanatus.

8. **C. villosa** L. Pl. Rar. Afr. 28. 1760: Amoen. Acad. 6. 112. 1763. *Hydrocotyle villosa* L.f. Supp. Pl. 175. 1781. *H. uncinata* Turcz. Bull. Soc. Nat. Mosc. 20. 1. 169. 1847. *Mercurialis afra* L. Mant. 298. 1767.

Diffuse, more or less prostrate, covered all over with short hairs.

Stems woody at the base only, much branched. *Leaves* usually in groups: blades acute, entire, mucronate, ovate, oblong or oblong-lanceolate, the lower cordate at the base, 1—3 cm. long, 1—2 cm. wide, the upper smaller, cordate, rounded, truncate or very shortly cuneate at the base, usually oblique: central vein distinct, the lower leaves with 2 other longitudinal veins converging towards the tip: petioles slender, 1·5—5 cm. long: sheaths small, not scarious at the edges. *Umbels* 3-rayed but often closely approximated, the rays about 0·5 cm. long. *Male flowers* with 4 bracts, bisexual with 2. *Petals* hairy. *Fruit* flattened, pale-covered, longer than wide, flat-topped, 2—4 mm. long, 1·5—3 mm. wide, almost smooth, not wrinkled, the ridges scarcely projecting. Fruit broader than and as long as or slightly longer than the acuminate hairy bracts.

Rocks on mountains in the western districts.

Variable in leaf shape, leaf size, and in the degree of hairiness and in colour, to a considerable extent in relation to habitat and age. The larger basal leaves wither away in older plants and especially in dry situations. Plants from dry sites are more densely hairy and grey in colour.

Type in herb. Linn.

CLANWILLIAM. Pakhuis Pass, *Esterhuysen* 3420: S. Cedarberg, *Esterhuysen* 17496. CERES. Cold Bokkeveld, *Adamson* 1050, 1114, 4224, 4266, 4287; Elands Kloof, *Drege; Schlechter* 10074; de Straat, *Compton* 6553; Mostert's Hoek, *Bolus.* TULBAGH. Witzenberg, *Burchell* 8704. PIKETBERG. Avontuur Hill, *Pillans* 7390; Porterville, *Esterhuysen* 16220. WORCESTER. Worcester, *Ecklon & Zeyher* 1.1; Hex River, *Tyson* 743; *Wolley-Dod* 4019; *Zeyher;* Prospect Peak, *Esterhuysen* 15945. PAARL. Witte River, *Adamson* 4242: *Esterhuysen* 1974; *Hafstrom;* Witteberg, *Esterhuysen* 16509; Simonsberg, *Drege* 7610; Drakenstein Mts., *Esterhuysen* 1321, 9548; Franschhoek Mts., *E. P. Phillips* 3356. STELLENBOSCH. Stellenbosch, *Harvey.* CAPE. Lion's Head, *Adamson* 1891, 2809; *Wolley-Dod* 2330; Table Mt., *Bolus* 2791. CALEDON. Caledon, *Bolus.* Without exact locality:—*Linné; Thunberg; Zeyher.*

var. **latifolia** (E. & Z.) Adamson in Adamson & Salter Fl. Cap. Pen. 613. 1950 (*emend.*). *Hydrocotyle villosa* var. *latifolia* E. & Z. Enum. 332, 1837. (*p. pte.*). *H. villosa* var. *major* Sond. Fl. Cap. 2. 529. 1862. (*p. pte.*).

Less hairy. *Lower leaves* widely cordate and usually distinctly 3-veined, loosely hairy or glabrescent. *Fruit* circular in outline or wider than long, 3·5—4 mm. long, 4—4·5 mm. wide, twice as long as the bracts: mericarps wrinkled, with narrow curved ridges.

Very distinctive in the characters of the fruit. While most commonly with broad cordate 3-veined leaves there are many transitional stages. The original description of the variety was based entirely on leaf features and is not satisfactory without emendation.

The comparison made by Linné f. of the leaves with those of *Viola odorata* was evidently based on the variety. It is noteworthy that of specimens in the Linnaean Herbarium those named by Linné himself are of the commoner hairy form with small fruits while those added by his son are of this variety.

CERES. Michell's Pass, *Bolus* 5301; Castle Rocks, *Stokoe* 2040; Ceres Peak, *Esterhuysen* 17528. WORCESTER. Du Toit's Peak, *Esterhuysen* 16649. TULBAGH. Witzenberg, *Pillans* 9630. PAARL. Wemmershoek Tafelberg, *Esterhuysen* 17697. STELLENBOSCH. Buller's Kop, *Esterhuysen* 1997. CAPE. Constantiaberg, *Adamson* 2384: Table Mt., *Schlechter* 132. Without exact locality:—*Linné f. Ecklon* 2162.

Series 3. **Capenses.**

Hirsutae. *Folia* cuneata apice vel totius dentata vel lobata. *Umbellae* compactae multiradiatae radiis bracteis involucri brevioribus et eis circumdatis.

KEY TO THE SPECIES.

1. Umbels pedunculate: leaves cuneate-ovate .. .. .. 9. *capensis*
1. Umbels sessile or nearly so.
    2. Leaves channelled, not distinctly petiolate, 3-toothed at the tip: plants thinly hairy .. .. 11. *tridentata*
    2. Leaves flat, cuneate, petiolate, toothed in the upper half: plants densely hairy.
        3. Leaves oblong-cuneate, 3-veined, many-toothed near the tip .. .. 10. *hermanniaefolia*
        3. Leaves narrow-oblong, very narrowly cuneate, 1-veined, 3-toothed at the tip .. .. .. 10. *hermanniaefolia* var. *littoralis*

9. **C. capensis** (L.) Domin. Bot. Jahrb. 41. 161. 1908. *Solandra capensis* L. Sp. Pl. ed. 2. 1407. 1763. *Hydrocotyle Solandra* L.f. Supp. Pl. 176. 1781. *H. tomentosa* Thunb. Diss. Hydroc. 416. 1798. *C. Solandra* (L.f.) Drude in Engler & Prantl Nat. Pflanzf. 3.8. 120. 1898.

In low loose tufts, covered all over with short white or rusty hairs. Underground *stems* woody, branched. *Leaves* crowded, petiolate: blades cuneate, ovate or spathulate, 0·7—2·5 cm. long, 0.6—2 cm. wide, obtusely lobed in the upper part, the tip acute but often much shorter than the lobes: petioles 0·8—3 cm. long: sheaths scarious at the edges. *Umbels* pedunculate, the peduncles 0·8—3 cm. long, as long as the petioles. *Involucral bracts* villous. *Flowers* 5 or 6. *Petals* rather large, white, obtuse, glabrous or with a few hairs on the back. *Disc* prominent, flat, red or yellow. *Fruit* flattened, pale-coloured, about 4 mm. long, 3·5—4 mm. wide, wrinkled, with rather prominent ridges. *Involucral bracts* as long as or longer than the fruit.

Dry lower slopes especially on clay soils throughout the coastal belt. Variable in colour, the degree of hairiness, and in the leaf size and shape. Shade forms have stems with longer internodes and larger leaves, the plants described under *H. Solandra* var. *longifolia* DC. Prodr. 4. 1830 are merely such forms. In the Thunberg collections specimens of both *C. capensis* and *C. hermanniaefolia* are included under his *H. tomentosa*.

CLANWILLIAM. Olifants River, *Ecklon & Zeyher* 2163: *Esterhuysen* 17850. HOPEFIELD. Mamre, *Bolus* 4283. MALMESBURY. Kasteelberg. *Zeyher* 4732. TULBAGH. Tulbagh Kloof. *Bolus* 13560: *Esterhuysen* 6069: *Zeyher*: Tulbagh Waterfall. *Zeyher*. CAPE. Lion's Head, *Burchell* 8450; *Drege; Ecklon* 468; *Ecklon* (*H. tomentosa*); *Kensit; Pappe; Wolley-Dod* 1181; Signal Hill, *E. P. Phillips* 23; *Salter* 272/7; Cape Town, *Alexander; Humbert* 9466; *Marloth* 144; Table Mountain, *Ecklon & Zeyher* 2163; *Pappe; Rehmann* 1361; *Shantz* 68; *Zeyher;* Kloof Nek, *Bunbury:* Devil's Peak, *Thode* A.104; *Tyson* 2438; Green Point, *Prior*; Sea Point, *Bolus* 3967; Camps Bay, *Guthrie* 538 (p. pte.); *Hafstrom; MacOwan* 129, 2314; *C. A. Smith* 2895, 2909; Little Lion's Head, *Adamson* 1186, 3754, 3755: Hout Bay, *Gamble* 22471; *Schlechter* 1224. PAARL. Paarl Mt., *Drege;* Joostenberg, *Esterhuysen* 16203. ROBERTSON. Omklaar. *Stokoe*. MONTAGU. Montagu. *Barnard*. KNYSNA. Knysna. *Gillett* 1281. Without exact locality:—*R. C. Alexander; Ecklon* 5, 2169; *Forsyth; Roxburgh; Harvey* 619; *Pallas; Sparrman; Oldenburg* 288: *Sieber* 140: *Zeyher*.

var. **micrantha** var. nov.

A typo differt:—foliis minoribus angustioribus acute dentato-lobatis umbellis parvis congestis, pedunculis petiolis multo brevioribus, bracteis 4 acutis villosis, flore fertile breviter pedicellato, floribus masculis sessilibus.

Grey-green, in low patches. Aerial *stems* very short. *Leaves* crowded, narrow-ovate, 1·5 cm. long, 0·5—0·7 cm. wide, with narrow acute distinct lobes in the upper part. *Umbels* small, much crowded together, on peduncles 0·5—0·8 cm. long. *Involucral bracts* 4, villous, acute, with many distinct veins. Bisexual *flower* on a pedicel 1—2 mm. long, the male sessile, small. *Petals* glabrous. *Disc* smaller than in the usual form.

Easily distinguished by the narrow acutely toothed leaves and the small crowded umbels on short peduncles.

CLANWILLIAM. Pakhuis Pass, *Adamson* 4260 (*type*).

10. **C. hermanniaefolia** (E. & Z.) Domin. Bot. Jahrb. 41. 161. 1908. *Hydrocotyle hermanniaefolia* Eck. & Zeyh. S.A. Quart. Journ. 375. 1830: (Enum. 333. 1837).

Densely covered all over with short white or yellowish hairs. *Stems* decumbent, woody at the base, laxly branched. *Leaves* usually clustered, petiolate: blades cuneate at the base, more or less rounded and toothed at the tip, 3—4 cm. long, 1—1·8 cm. wide, the veins obscure except the midrib: petioles 2—5 cm. long. *Umbels* often in pairs, almost sessile: peduncles 1—2 mm. long. *Flowers* about 6; rays shorter than the bracts, that of the bisexual flower very short. *Petals* white, densely hairy on the back. *Fruit* about 5 mm. long and wide, flattened, with prominent ridges and much wrinkled furrows.

Local on sands chiefly near the coast in the Port Elizabeth district.

HUMANSDORP. Krakakama *Ecklon & Zeyher* 2164; Gamtoos River, *Hutchinson* 1477. UITENHAGE. Swartkops River, *Bunbury; Ecklon & Zeyher* 2665; *Zeyher* 249 (type). PORT ELIZABETH. Walmert *Paterson* 2347. ALBANY. Kassouga River, *Burchell* 3975. Withou, exact locality:—*Drege* 7613: *Thunberg*.

var. **littoralis** (E. & Z.) Domin. Bot. Jahrb. 41. 161. 1908. *Hydrocotyle littoralis* Eck. & Zeyh. 334. 1837. *H. hermanniaefolia* var. *littoralis* Sond. Fl. Cap. 2. 530. 1862.

More woody than the species, usually white-hairy. *Leaves* much crowded, linear-lanceolate, 2—3 cm. long, 0·3—0·6 mm. wide, 3—5-toothed at the extreme tip, without distinct petioles. *Umbels* smaller, 5-flowered.

Coastal sands in the Swellendam region.

SWELLENDAM. Dunes, *Mundt* (type). BREDASDORP. Cape Agulhas, *Ecklon & Zeyher* 2168, 2169.

11. **C. tridentata** (L.f.) Drude in Engler & Prantl Nat. Pflanz. 3.8. 120. 1898. *Hydrocotyle tridentata* L.f. Supp. Pl. 176. 1781. *Bolax tridentata* Spreng. Prodr. Umbell. 84. 1813. *C. hermanniaefolia* var. *Schlechteriana* Domin. Bot. Jahrb. 41. 162. 1908.

Usually pubescent, from densely hairy to glabrescent. *Stems* woody below ground, the aerial short, little branched. *Leaves* crowded, elongate, narrowly cuneate, 2—5 cm. long, up to 6 mm. wide at the tip, not obviously petiolate, usually grooved above, with 3 small equal acute teeth at the tip: sheaths wide, scarious at the edge, 5—6 mm. long. *Umbels* sessile. *Involucral bracts* 4, lanceolate, acute, 4—5 mm. long, densely villous, either white or brown. *Flowers* sessile, usually 6. *Petals* villous on the back. *Fruit* sessile, compressed, 3·5—4 mm. long and wide, pale-coloured, wrinkled, with rather prominent ridges.

Damp sandy soils at low altitudes in the southern coastal belt.

Specimens (*Schlechter* 9463) which were made the type of *C. hermanniaefolia* var. *Schlechteriana*, most certainly belong to this species.

MALMESBURY. Darling, *Zeyher*. CAPE. Blaauwberg, *Zeyher;* Tygerberg, *Ecklon & Zeyher* 2167; Vygeskraal, *Wolley-Dod* 1477, 1679; Milnerton, *Adamson* 2483; Cape Flats, *Marloth* 7377; Camps Bay, *Guthrie* 538 (p. pte.); Mowbray, *Guthrie* 237; Rondebosch, *Wolley-Dod* 907; Kenilworth, *Adamson* 1194; Retreat, *Schlechter* 1250; Simonstown, *Adamson* 1339, 1832; *Bolus* 4682; *Salter* 272/9; *Wolley-Dod* 3000; S. Peninsula, *Adamson* 1156, 1913; *Levyns; Salter* 2900. STELLENBOSCH. Kuils River, *Drege; Lamb* 1073. CALEDON. Palmiet River, *Esterhuysen* 13691: Hawston. *Schlechter* 9463. SWELLENDAM. Swellendam. *Mundt; Zeyher* 4. Without exact locality:—*Sir F. Gray; Harvey; Pappe; Thunberg.*

Series 4. **Montanae.**

Folia basalia vel omnia petiolata, cuneata, apice dentata vel lobata. Radii umbellarum bracteis longiores vel aequilongi.

KEY TO THE SPECIES.

1. Umbels with 6 or more rays.
  2. Procumbent, glabrescent: leaves thick, toothed at the tip, all alike: fruit on an elongated deflexed ray .. .. .. 15. *triloba*
  2. Erect: woolly at least when young: lower leaves rounded or oblong, the upper lanceolate: fruit on a short erect ray .. 16. *difformis*
1. Umbels with 3, rarely 4 or 5, rays.
  3. Usually hairy: fruit not longer than the bracts.
    4. Leaves oval, usually acute, with large teeth at the tip.
      5. Loosely villous: petals glabrous: fruit enclosed by the bracts .. .. 12. *montana*
      5. Densely covered with short hairs: petals villous .. 13. *Dregeana*
    4. Leaves rhombic, crenate in the upper half, more or less glabrescent .. .. 14. *Fourcadei*
  3. Glabrescent: fruit much longer than the bracts.
    6. Woolly when young: leaves wedge-shaped, 3 or more toothed at the tip: fruit rounded .. .. .. 17. *dentata*
    6. Glabrous or shortly hairy: leaves ovate or oblong, often entire: fruit longer than wide .. .. 18. *glabrata* (cf. Ser. 5)

12. **C. montana** (Ch. & Sch.) Domin. Bot. Jahrb. 41. 162. 1908. *Hydrocotyle montana* Cham. & Schlechtd. Linnaea 1. 374. 1826.

Loosely villous. Low-growing and almost tufted. *Stems* woody below, with short prostrate or decumbent branches. *Leaves* petiolate, all alike, the upper smaller: blades ovate-lanceolate, 1·5—2·5 cm. long, 0·7—1·2 cm. wide, 3-veined, cuneate at the base, acute at the tip, entire or with 2—5 acute teeth, the median longer than the others: petioles 1—3 cm. long. *Umbels* sessile, 3-rayed, densely and coarsely villous. *Involucral bracts* thin, often scarious, acute, 5—8 mm. long, covered with long hairs. *Rays* 0·5—1 cm. long. *Petals* glabrous, obtuse, as wide as long. *Fruit* circular or broader than long, about 3 mm. wide, black when mature: mericarps rather tumid, with 2 prominent and 2 faint ridges on each face. *Bracts* hairy, acute, at least twice as long as and broader than the fruit.

Upper parts of mountains between Swellendam and the Long Kloof.

A distinctive species but one which has been much confused with *C. difformis* (cf. Journ. S. Afr. Bot. 15. 93. 1949).

The type is *Mundt & Maire* from the Long Kloof Mountains.

SWELLENDAM. Zuurbraak Peak, *Schlechter* 2103; Lemoenshoek Peak, *Adamson* 3880; *Esterhuysen* 10442; *Walgate* 939: Langebergen near Heidelberg, *Esterhuysen* 18262. UNIONDALE. Helpmekaar Mt., *Compton* 5192; Joubertina, *Esterhuysen* 16839, 16840.

var. **longifolia** var. nov.

A typo differt:—foliis longioribus integerrimis lineari-lanceolatis longe petiolatis, umbellis inter folios sessilibus congestis, bracteis angustioribus.

A tufted plant. *Leaves* erect, linear-lanceolate or linear-oblong, entire, 3-veined, glabrescent: blades 2—5 cm. long, 0·5—1 cm. wide: petioles 3—6 cm. long. *Umbels* villous, hidden among the leaves. *Fruit* usually pale-coloured, with bracts about half its width and slightly longer.

Mountains in the Long Kloof.

UNIONDALE. Joubertina, *Esterhuysen* 16767 (type); Lauterwater, *Compton* 5161; Die Hoek, *Esterhuysen* 16371.

13. **C. Dregeana** (Sond.) Domin. Bot. Jahrb. 41. 162. 1908. *Hydrocotyle Dregeana* Sond. Fl. Cap. 2. 530. 1862.

A loosely tufted low-growing plant covered with short hairs but more or less glabrescent. *Leaves* petiolate, crowded: blades ovate, 8—12 mm. long, 4—5 mm. wide, cuneate at the base, acute and usually 5-toothed at the tip: petioles 1·2—2 cm. long. *Umbels* 3-rayed, very shortly pedunculate. *Petals* villous. *Fruit* circular, about 4 mm. diam., the mericarps with 2 distinct ridges on each face. *Bracts* 2, acuminate, slightly longer than the fruit.

Only known from descriptions. Once collected by Drege at Ezelfontein in Namaqualand.

14. **C. Fourcadei** sp. nov.

Herba glabrescens basi tantum lignosa ramis procumbentibus. *Folia* basalia petiolata rhombica apice serrato-dentata, superiora angustiora integra vel apice paucidentata. Umbellae 3—6-radiatae, saepissime 4.

Petala glabra. *Fructus* orbicularis pallidus bracteis aequilongus vel paulo longior.

A sprawling herb, woolly on the youngest parts but generally glabrescent. *Lower leaves* with rhombic blades 3·5—4 cm. long, 2·2—2·8 cm. wide, cuneate at the base, entire on the lower half but sharply toothed on the upper, 3-veined with the veins distinct below: petioles 4—6·5 cm. long: sheaths with obtuse auricles. *Upper leaves* smaller and narrower, either 3-toothed at the tip or the uppermost entire: petioles much shorter. *Umbels* 3—6-rayed, most commonly 4. *Rays* slender, more or less hairy, those with male flowers 7—9 mm. long. *Petals* glabrous. *Fruit* circular, pale-coloured, about 3 mm. diam., the mericarps with 3 small ridges on each face and slightly wrinkled furrows. *Bracts* acuminate, ciliate, as long as or slightly shorter than the fruit. *Fruit ray* erect, 3—4 mm. long.

Lower slopes and flats in the Knysna-Humansdorp region.

HUMANSDORP. Witelsbosch, *Fourcade* 2202 (*type*), 2291.

15. **C. triloba** (Thunb.) Drude in Engler & Prantl Nat. Pflanzf. 3. 8. 120. 1898. *Hydrocotyle triloba* Thunb. Diss, Hydroc. 6. t.3. 1798. *Bolax triloba* Spreng. Prodr. Umbell. 34. 1813.

A stout sprawling or prostrate apparently glabrous herb. *Stems* woody at the base, branched, up to 50 cm. long, often with long stout prostrate ridged lateral branches. *Leaves* clustered, more or less shining green, rather thick, glabrous, petiolate: blades cuneate-spathulate or broadly wedge-shaped, usually 3-veined, 2—5 cm. long, 1·5—4 cm. wide, with 3—9 almost equal acute teeth at the tip: petioles 2—6 cm. long: sheaths ciliate. *Umbels* sessile, many-rayed, the rays as long as or longer than the hairy acuminate involucral bracts. *Petals* hairy. *Fruit* pale-coloured, flattened, 3—4 mm. long, 2·5—3 mm. wide, not much wrinkled, the ridges not prominent. *Bracts* acuminate, half to three-quarter the length of the fruit. *Fruit ray* finally 1—2 cm. long and usually deflexed.

Rocks on mountains in the coastal belt in the Caledon region. More common at higher altitudes but descending to sea level.

CAPE. Muizenberg Mt., *Schlechter* 1298; *Wolley-Dod* 2309. STELLENBOSCH. Gordon's Bay, *Bolus* 9824; Hottentots Holland, *Ecklon & Zeyher* 59.7; *Zeyher* 2664. CALEDON. Sir Lowry Pass, *Bolus* 4532; *Galpin* 12403; *Hafstrom & Acock; Hutchinson* 505; *Marloth* 5186, 10021; Steenbras, *Adamson* 4228; *Esterhuysen* 3032; *Galpin* 12403; *Salter* 4196; Hangklip, *Pillans* 8329; Palmiet River, *Adamson* 4175, 4187; *Barker* 6091; *Levyns* 6329; *Wall*; Houwhoek, *Adamson* 4247; *Bolus* 130, 4532; *Ecklon & Zeyher; MacOwan* 130; Hermanus, *Bolus; J. C. Smuts* 1106; Klein River Mts., *Adamson* 4270; *Guthrie* 314. ROBERTSON. Poesjenets Riv., *Levyns* 5501. Without exact locality:—*Harvey* 624; *Ecklon* 2166.

16. **C. difformis** (E. & Z.) Adamson Journ. S. Afr. Bot. 15. 94. 1949. *Hydrocotyle difformis* Eck. & Zeyh. Enum. 333. 1837. *H. montana* Sond. Fl. Cap. 2. 531. 1862. *non* Cham. & Schl.

More or less erect. Woolly at least when young but generally partly glabrescent. *Stems* short, usually solitary, the flowering branches rigid, 10—40 cm. high. *Basal leaves* rigid, petiolate: blades broadly spathulate, 1—5.5 cm. long, 1—4 cm. wide, rounded at the base, more or less truncate at the tip with 3—11, most commonly 3—5, prominent teeth: petioles 3—25 cm. long. *Upper leaves* smaller, 2—4 cm. long, 0·8—1·5 cm. wide, more or less lanceolate, cuneate at the base, often entire: petioles 1·5—3 cm. long. *Umbels* many-rayed, the rays shaggy, longer than the thin hairy involucral bracts. *Fruit ray* very short, erect. *Petals* hairy on the middle of the back, longer than wide. *Fruit* hairy when young, pale-coloured, 3·5—6·5 mm. long, 3·5—4 mm. wide, the mericarps with prominent ridges and smooth furrows. *Bracts* acute, shaggy, much shorter than the fruit.

Common on heathy sands on mountains in the S.W. coastal belt. Extends from sea level to mountain tops.

Variable in size and in hairiness. Late in the season the basal leaves wither away and specimens may look rather different.

CAPE. Muizenberg Plateau, *Adamson* 3070; *Salter* 272/11, 1805. STELLENBOSCH. Stellenbosch, *Drege*. PAARL. Franschhoek Pass, *Pillans* 7012. CALEDON. Somerset Sneeuwkop, *Esterhuysen* 2596, 2597; Rooi Els, *Adamson* 4272, 4273; *Leighton* 1450; Hangklip, *Adamson* 4225; *Barker* 6092; *Compton* 6107; *Rodin* 3161; Palmiet River, *Adamson* 4164, 4184, 4185, 4214, 4215, 4216; *Barker* 6090; *Compton* 12532; *Esterhuysen* 12613; *Levyns* 3837; *Stokoe; Zeyher* 2666 (*type*); Paardeberg, *Adamson* 4188; Highlands, *Adamson* 4276; Kleinmond, *Compton* 3962; *Esterhuysen;* Bot River, *Adamson* 4099; Onrust, *Compton* 3963; *Esterhuysen* 4233; Hermanus, *Galpin* 12901; *Salter* 5165; Shaws Mt., *Lewis* 53101; *Salter* 5162; Elgin, *Levyns* 3383; Viljoen's Pass, *Salter* 3079; *Wall* 2452; Houwhoek, *Bowie* 9, 10; *Schlechter* 7428; Genadendal, *Burchell* 7672; *Ecklon & Zeyher* 2165; Grietjesgat, *Bolus* 4139; *Ecklon & Zeyher.* BREDASDORP. Elandskloof Mts., *Adamson* 4322, 4324; Cape Agulhas, *Salter* 4115; The Poort, *Acock* 1527; *Esterhuysen* 3021; *Leighton* 21091; Bredasdorp, *Acock* 15460.

17. **C. dentata** sp. nov.

Suberecta ramosa, primo lanata sed glabrescens. *Folia* petiolata laminis obovato-cuneatis apice dentatis vel lobatis. *Umbellae* 3, 4 vel 5-radiatae, radiis longis. *Petala* glabra. *Fructus* orbicularis rugosus bracteis longior in radio elongato positus.

A suberect or sprawling herb, the young parts woolly but later glabrescent except for the sheaths and axils. *Stems* with long internodes, woody only at the base. *Leaves* scattered, petiolate: petioles 2—3·5 cm. long: blades narrow cuneate-obovate, 3—4 cm. long, 4—8 mm. wide, acutely toothed or lobed at the tip, 3-veined, somewhat reticulate when dry. *Umbels* solitary, with 3, 4 or 5 rays up to 1 cm. long. *Petals* glabrous, white, rather large. *Fruit* rounded, 4 mm. diam., 1½ times as long as the bracts: furrows distinctly wrinkled. Fruit on a straight ray 1—2 cm. long.

Rather rare on mountains in the central Langeberg.

SWELLENDAM. Strawberry Hill, *Esterhuysen* 10506: Mts. near Heidelberg, *Esterhuysen* 18282. RIVERSDALE. Garcias Pass, *Esterhuysen* 17221 (*type*).

Series 5. **Glabratae.**

Caules procumbentes raro erecti. *Folia* integra, plana vel raro recurvata, basi cuneata, apice acuta, nervis 1 vel saepe 3. *Umbellae* saep-aggregatae saepissime in ramis lateralibus positae, radiis 3 vel 6.

KEY TO THE SPECIES.

1. Fruit on a ray not exceeding its length.
2. Erect woody plants: leaves oblanceolate, 1-veined: fruit shorter than the broad bracts .. .. 31. *rupestris*
2. Herbs, woody at the base only, prostrate or sprawling: fruit as long as or longer than the bracts.
3. Leaves obovate, 1-veined, sessile or shortly petiolate: ♂ flowers numerous: fruit wider than long .. .. 28. *sessilis*
3. Leaves ovate, oblong or lanceolate, the lower with long petioles: umbels 3-rayed: fruit longer than wide.
4. Leaves 3-veined, scattered: fruit longer than the bracts 18. *glabrata*
4. Leaves 1-veined, densely clustered: fruit about as long as the bracts .. .. 27. *pottebergensis*
1. Fruit on a ray greater than its length.
5. Fruit swollen, the mericarps as thick as wide.
6. Fruit conical, not narrowed in the middle .. .. 29. *fusca*
6. Fruit didymous, distinctly narrowed in the middle, the mericarps subspherical .. .. 30. *didymocarpa*
5. Fruit compressed or flattened, distinctly wider than thick.
7. Leaves linear, parallel-sided.
8. Erect: upper leaves sessile: fruit oblong, not over 3·5 mm. long, on an erect ray .. .. 24. *graminifolia*
8. Sprawling: leaves all petiolate: fruit circular, 4 mm. diam., on a long curved ray .. .. 20. *affinis*
7. Leaves lanceolate, oblong or ovate.
9. Fruit distinctly stipitate, rounded: leaves linear-lanceolate .. .. 22. *stipitata*
9. Fruit not stipitate.
10. Tufted: stems short: umbels densely villous .. 12. *montana* var. *longifolia*
10. Not tufted: stems elongated: umbels not densely villous.
11. Stems woody, ascending: petioles of the lower leaves six times as long as the blades: petals hairy .. 19. *cochlearia*

11. Stems woody at the base only, prostrate or sprawling: petioles not more than twice as long as the blades.
12. Stems often rooting at the nodes, with many short shoots: petals glabrous: fruit longer than wide .. .. 18. *glabrata*
12. Stems not rooting at the nodes, without short shoots.
13. Branches 4-angled: lower leaves with 3—5 projecting veins: fruit not over 3·5 mm. long, not much flattened .. .. 21. *debilis*
13. Branches terete: veins of the leaves not projecting: fruit flattened, at least 3·5 mm. long.
14. Fruit circular, about 4 mm. diam., on a long slender ray .. .. 20. *affinis*
14. Fruit longer than wide.
15. Fruit 4—6 mm. long, much longer than the bracts: leaves 3-veined.
16. Leaves coriaceous: lateral shoots long, prostrate .. .. 18. *glabrata*
16. Leaves not coriaceous; without long lateral shoots .. .. 23. *Comptonii*
15. Fruit not over 4 mm. long, parallel-sided: petals usually hairy.
17. Fruit much longer than the bracts .. 25. *scabra*
17. Fruit not or very slightly longer than the bracts.
18. Softly hairy: petioles longer than the blades: bracts longer than the fruit .. .. 26. *lasiophylla*
18. Scabrid: petioles not longer than the blades: fruit about as long as the bracts .. .. 25. *scabra*

18. **C. glabrata** L. Pl. Rar. Afr. 28. 1760; Amoen. Acad. 6. 112. 1763. emend. *Hydrocotyle glabrata* L.f. Supp. Pl. 176. 1781. *H. bupleurifolia* Rich. Monog. Hydroc. 78. 1820. *C. bupleurifolia* (Rich.) Adamson Journ. S. Afr. Bot. 6. 50. 1940. *H. Centella* Cham. & Schld. Linnaea 1. 375. 1826. *C. Chamissonis* Drude in Engler & Prantl Nat. Pflanz. 3.8. 120. 1898. *H. Centella* vars. *glabrescens* & *latifolia* DC. Prodr. 4. 69. 1830. *H. plantaginea* Spreng. Neu Entdeck. 1. 284. 1820. (*p. pte.*). *C. glabrata* var. *coriacea* Domin. Bot. Jahrb. 41. 164. 1908. *H. falcata* Eck. & Zeyh. Enum. 335. 1837 (*p. pte.*). *H. heterophylla* Schinz Bull. Herb. Boiss. 3. 410. 1895. *H. bupleurifolia* var. *tridentata* Eck. & Zeyh. Enum. 335. 1837.

A low-growing more or less prostrate plant, glabrous, glabrescent or less often shortly hairy. *Stems* woody and branching below ground, the aerial with short internodes but forming long prostrate lateral branches up to 1 mm. long which frequently root at the nodes. The lateral branches often bear erect short shoots. *Leaves* petiolate, variable in size and shape: blades firm, usually coriaceous, distinctly 3-veined, lanceolate, ovate-lanceolate or oblong, 2·5—5 cm. long, 0·4—1·8 cm. wide, cuneate at the base, acute or shortly apiculate at the tip, entire or occasionally 2 or 3-toothed: petioles 0·5—4·5 cm. long, longer on the short than on the long shoots. *Umbels* often crowded on the short shoots, 3-rayed, those on the long shoots usually with ♂ flowers only. *Petals* glabrous or rarely hairy. *Fruit* longer than wide, 3·5—6·5 mm. long, 3—5.5 mm. wide, with rather prominent ridges. *Bracts* acute, shorter than the fruit, varying from very short to two-thirds the length of the fruit. Fruit ray straight or curved, 0·5—1·5 cm. long.

Common and widespread through the coastal belt on lower slopes and flats. Absent at the higher altitudes.

A very variable species in size, leaf shape and texture, and in the degree of hairiness. Some of the variations are related to habitat and to season: plants growing on sand have larger and narrower leaves than those on clays, shade forms have broader and thinner leaves. Late in the season the basal leaves may wither away. The numerous varieties which have been based upon leaf form are of little value and quite impossible to disentangle satisfactorily. Many of them include both forms of this and of related species. Even the toothing of the leaves seems an accidental feature of no diagnostic value; it may be confined to the basal leaves (*H. heterophylla* Schinz) or occur in the upper leaves also (*H. bupleurifolia* var. *tridentata* E. & Z.). The varieties recognized here seem definite entities, some of them possibly specifically distinct.

In the past most authors have treated the species as an aggregate with a number of *formae* or varieties (Cham. & Schlechtd. Linnaea 1. 375. 1826: DC. Prodr. 4. 68. 1830: Sonder Fl. Cap 2. 532. 1862: Domin. Bot. Jahrb. 41. 168. 1908). Richard (Monog. Hydroc. 78. 1820) first attempted a segregation when he distinguished two species, *H. glabrata*, and *H. bupleurifolia*. While his diagnoses are satisfactory he applied the new name (*H. bupleurifolia*) to that part which contains the type of the original species. As under the Rules this must retain the original epithet, his name becomes a synonym.

CLANWILLIAM. Blaauwberg, *Drege;* Nieuwoudt Pass, *Compton* 4778; Olifants River, *Stephens* 7337. TULBAGH. Tulbagh, *Ecklon* 2175. MALMESBURY. Riebeck Kasteel, *Adamson* 4426. CAPE. Table Mt., *Ecklon & Zeyher* 2173; *Schlechter* 132; *Zeyher;* Devil's Peak, *Wolley-Dod* 250; Lion's Head, *Ecklon* 410, 2175; *Esterhuysen* 15760A; *Pappe;* Cape Town, *Humbert* 9441; *Marloth; Mogg* A13691; *Paterson* 79; *Rehmann* 1517; Round House, *Froembling;* Kirstenbosch, *Compton* 2184; *Esterhuysen* 15450; Wynberg, *Salter* 2184; Vlaggenberg, *Adamson* 1753; Constantiaberg, *Adamson* 2375; Pollsmoor, *Adamson* 2791; Noordhoek Mts. *Adamson* 2437; Muizenberg, *Adamson* 1267; *Salter* 272/10, 1895; Steenberg, *Adamson* 2107, 3071; *Salter* 272/33, 8430; Kalk Bay Mts., *Adamson* 2099, 2397, 3626; Simonstown, *Ecklon & Zeyher; Wright.* STELLENBOSCH. Somerset West, *Ecklon* 2174; Jonkershoek, *Adamson* 3838, 4230, 4232, 4237; Banhoek, *Esterhuysen* 11917; Hottentots Holland, *Ecklon & Zeyher* 2172; Stellenbosch Flats, *Garside* 1200; *Marloth* 1868. PAARL. Franschhoek Pass, *Adamson* 4082, 4088; *Esterhuysen* 2708; *Salter* 1936; Dal Josaphat, *Tyson* 895; Du Toit's Kloof Pass, *Esterhuysen* 15818A; Wemmershoek, *Andreae* 761. WORCESTER. Brandt Vlei, *Bolus* 5166; *Rehmann* 2378; Bain's Kloof, *Schlechter* 9198. CALEDON. Sir Lowry Pass, *Hafstrom;* Houwhoek, *Bowie;* Caledon, *Fries, Norlindh & Weimarck* 1410; Swartberg, *Galpin* 4089; *Zeyher;* Bosjesveldt, *Burchell* 7865; Sondereinde Mts. *Burchell* 7553; *Ecklon & Zeyher*. ROBERTSON. McGregor, *Adamson* 4447. SWELLENDAM. Swellendam, *Burchell* 7293; Buffelsjagts, *Burchell* 7277; Potteberg, *Adamson* 4311. KNYSNA. Barrington, *Fries, Norlindh & Weimarck* 1299. UITENHAGE. Swartkops Riv., *Zeyher* 1; Kagaberg, *MacOwan* 1141. PORT ELIZABETH. Port Elizabeth, *Paterson* 1031a. ALEXANDRIA. Nanaga, *Acocks* 12798. KENTANI. Kentani, *Pegler* 793. LIBODE, Port St. Johns, *Acocks* 10963; *Galpin* 3430. NATAL. Alexandria. *Rudatis* 1206. Without exact locality *Ecklon* 2179; *Harvey* 625; *Lehmann; Masson; Marloth* 8909; *Oldenburg*.

var. **natalensis** var. nov.

A typo differt:—foliis strigosis lineari-lanceolatis fasciculatis saepissime 1-nerviis, fructibus in radio tenuissimo elongata positis, obovatis, jugis prominentibus, valleculis tuberculatis tuberculis saepe confluentibus.

Prostrate or sprawling. *Stems* with long internodes and distinctly fasciculate leaves, not rooting at the nodes. *Leaves* strigose or hairy, linear-lanceolate, 2—4 cm. long, 3—5 mm. wide, acute, usually with 1 vein or if 3-veined the lateral very slender: petioles usually shorter than the blades. *Umbels* 3-rayed, often aggregated, the rays 1—2 cm. long. *Petals* glabrous. *Fruit* 5—6 mm. long, 4—4·5 mm. wide, obovate, flat-topped: mericarps with 3 prominent ridges on each face, the furrows with obtuse tubercles forming incomplete secondary ridges. *Fruit* 2—3 times as long as the acute bracts, on a very slender ray 2—3 cm. long.

A very distinct variety possibly worthy of specific rank.

NATAL. Gingolova, *Wood* 10162 (type); Izingola, *Wood* 3007; Inanda *Wood* 319; Izingolweni *Wood* 449; *Gerrard* 1485, 1486; Greytown *B. S. Fisher* 922; Port Edward, *H. A. Wager;* Omsomcaba, *Drege;* Alfred, Harding, *Acock* 12239. TRANSKEI. *Flanagan* 188; Tsolo, *V. Payne*. EAST LONDON. East London, *Galpin* 5782; *Rattray* 1278. STUTTERHEIM. Dohne, *Acock* 9557. BATHURST. Bathurst, *Acock* 11060.

var. **bracteata** var. nov.

A typo differt:—foliis saepissime lineari-lanceolatis, fructibus laevibus, bracteis multo brevioribus, bracteis plus minusve foliaceis.

Differs in the long almost leaf-like bracts which are much longer than the fruit. The fruit is almost smooth with the ridges as scarcely raised lines.

RIVERSDALE. Foothills of Langeberg, *Burchell* 6910 (*type*). STELLENBOSCH. Jonkershoek, *Adamson* 4009 (not extreme).

19. **C. cochlearia** (Domin) Adamson comb. nov. *C. glabrata* var. *cochlearia* Domin. Bot. Jahrb. 41. 165. 1908.

Bushy. *Stems* woody, ascending, branched. The young parts hairy but soon glabrescent. *Aerial stems* sulcate. *Leaves* dull green, coriaceous, crowded, the groups separated by long internodes: blades lanceolate-ovate or linear-oblong, about 1·5 cm. long, 3—4 mm. wide, rather thick, 1-veined, acute or shortly mucronate: petioles of the lower leaves 6—10 cm. long. *Umbels* crowded, 3-rayed, the rays 0·5—1.5 cm. long, hairy. *Petals* hairy. *Fruit* oblong, 4 mm. long, 3 mm. wide, with prominent ridges, as long as or slightly longer than the hairy bracts.

Allied to *C. glabrata* but differing in the habit, the long-petiolate lower leaves with 1 vein, the hairy petals, and the much longer bracts to the fruit. Originally described as a variety. The type material is incomplete; the later specimens collected at Klaver are much better.

VAN RHYNSDORP. Windhoek, *Schlechter* 8367 (*type* in herb. Kew); Klaver, *C. A. Smith* 2614.

20. **C. affinis** (E. & Z.) Adamson comb. nov. *Hydrocotyle affinis* Ecklon & Zeyher Enum. 335. 1837. *C. glabrata* var. *affinis* Adamson Journ. S. Af. Bot. 6. 52. 1940. *C. glabrata* var. *linifolia* Adamson l.c. *C. glabrata* var. *linifolia* f. *flaccida* Domin Bot. Jahrb. 41. 168. 1908. *H. Centella* var. *linifolia* DC. Prodr. 4. 69. 1830 (p. pte.). *H. Centella* var. *linifolia* s-var. *flaccida* Sond. Fl. Cap. 2. 532. 1862.

Slender, sprawling or prostrate, glabrous, glabrescent or rarely hairy. *Aerial stems* many, not rooting nor forming short shoots. Leaves petiolate: blades linear or linear-lanceolate, parallel-sided, 1—4 cm. long, rarely over 5 mm. wide, commonly 2—3 mm., thin, flat or sometimes rolled, 1-veined or if 3-veined the lateral marginal, acute or mucronate at the tip, the mucro often curved: petioles of the lower leaves up to 6 cm. long, shorter in the upper. *Umbels* 3-rayed, often crowded: rays slender 0·4—0·8 cm. long. *Petals* glabrous. *Fruit* flattened, circular in outline, 2·5—4 mm. diam., often emarginate at the tip, much longer than the acute bracts. *Mericarps* with 3 curved ridges on each face and wrinkled furrows. *Fruit ray* very slender, 1—2·5 cm. long, usually curved and deflexed at least at the tip.

Distinguished by the habit, narrow leaves, and especially by the fruit. In the past much confused with narrow leaved forms of *C. glabrata.*

CLANWILLIAM. Olifants River, *Ecklon & Zeyher* 2180. WORCESTER. Matroosberg, *Esterhuysen* 14198. STELLENBOSCH. Faure, *Acock* 5380. CAPE. Doornhoogte, *Ecklon;* Table Mt., *Adamson* 2779, 3018; *Bolus* 1118; *Drege; Ecklon* 412; *Ecklon & Zeyher* 2177 (*type*); *Esterhuysen* 15447, 16606: Devil's Peak, *Wolley-Dod* 914; Lion's Head *Adamson* 2812; Signal Hill, *Adamson* 1848, 2542; Camps Bay, *Humbert* 9416; *Morris* 116; *Wilms* 3249; Stinkwater, *Rehmann* 1363; Rosebank, *Schlechter* 1249; Constantia Nek, *Adamson* 1697; Retreat, *Adamson* 2217; Bergvliet, *Adamson* 2674, 2681; *Lewis* 58653; Muizenberg, *Acock* 512; *Adamson* 3196; Simonstown, *Adamson* 1992; *Wright;* Kommetjie, *Adamson* 2904; S. Peninsula, *Adamson* 1818, 2459. BREDASDORP. Cape Agulhas, *Schlechter* 10567. SWELLENDAM. Potteberg, *Adamson* 3778. RIVERSDALE. Riversdale. *Marloth* 7306. KNYSNA. Robben Hoek, *Fourcade*. HUMANSDORP. Krakakama, *Zeyher* 2658. ALEXANDRIA. Zuurberg, *Drege* 7618. PORT ELIZABETH. Walmer, *Paterson* 1030, 2515. STOCKENSTROOM. Katberg, *Zeyher* 2658. Without exact locality:—*Masson; Pappe.*

var. **Richardiana** Adamson nom. nov. *C. glabrata* Adamson Journ. S. Af. Bot. 6. 50. 1940. *Hydrocotyle glabrata* Rich. Monog. Hydroc. 78. 1820. *H. falcata* E. & Z. Enum. 335. 1837 (p. pte.).

Differs in having ovate, oblong or oblong-lanceolate 3-veined leaves 4—12 mm. wide. *Leaves* thin, not coriaceous. *Umbels* and fruit as in the typical form.

Very distinctive in its more extreme forms but connected by intermediates. The variety has been confused with *C. glabrata* and specimens have had many names attached to them. It is at once separated on the fruit characters.

PIKETBERG. 24 Rivers, *Esterhuysen* 16225. CERES. Visgat, *Esterhuysen* 13441. STELLENBOSCH. Faure, *Penfold;* Simonsberg, *Bond* 1542. CAPE. Table Mt., *Drege; Ecklon & Zeyher* 2174 (*H. plantaginea*)*; Ecklon & Zeyher* (*H. falcata* v. *lanceolata*)*;* Devil's Peak, *Adamson* 2317, 2147; *Bunbury; Bolus* 1118; *Esterhuysen* 13901; *Leighton* 1062; *Levyns* 3626; *Wolley-Dod* 250; Lion's Head, *Ecklon & Zeyher* (*H. falcata* v. *angustifolia*)*;* Rosebank, *Guthrie* 443, 490; Claremont, *Schlechter* 266; Kirstenbosch, *L. Bolus; Compton; Esterhuysen* 554, 15844, 15449, 15749; Wynberg Hill, *C. Norman* 268; Tokai, *Adamson* 4022 (*type*)*; Ecklon* 409; Hout Bay, *Adamson* 2022; Chapman's Peak, *Adamson* 2242; Paulsberg, *Adamson* 2749. CALEDON. Zwartberg, *Zeyher*. RIVERSDALE. Coast, *Muir* 4334. PRINCE ALBERT. Swartberg, *Adamson* 4354, 4364. KNYSNA. Knysna, *Bowie* 11: Heads, *Williamson*. UITENHAGE.

Van Staden's River, *MacOwan* 1141; Addo, *Ecklon & Zeyher* 2174. PORT ELIZABETH. Port Elizabeth, *Paterson* 1031. Without exact locality:—*Alexander; Harvey* 621, 633.

var. **oblonga** Adamson var. nov.

A typo differt caulibus brevioribus decumbentibus, foliis longe petiolatis laminis ovato-oblongis basi plus minusve abrupte attenuatis, petalis villosis, fructibus majoribus in radio breve positis.

Low growing. Stems woody at the base, decumbent, 5—10 cm. long. *Leaves* with 3-veined symmetrically oblong blades, 1—1·7 cm. long, 1—1·5 cm. wide, acute, rather sharply narrowed at the base: petioles 2- or 3-times as long as the blades. *Umbels* on the prostrate shoots, 3-rayed, the rays hairy. *Petals* villous. *Fruit* cordate-orbicular, 4 mm. long, 3·5 mm. wide, with prominent curved ridges, much longer than the acuminate partly scarious bracts. Fruit on a ray not over 1 cm. long.

Very distinctive in habit and leaf shape.

CLANWILLIAM. Cedarberg, Apollo, *Esterhuysen* 18061 (type). WORCESTER. Fonteintjesberg, *Esterhuysen* 16628.

21. **C. debilis** (E. & Z.) Drude in Engler & Prantl Nat. Pflanzf. 3.8. 120. 1898. *Hydrocotyle debilis* E. & Z. Enum. 336. 1837.

A slender more or less prostrate herb, usually rough with short hairs. *Stems* very slender, up to 50 cm. long, the younger with 4 small wings- Lower *leaves* clustered, the upper solitary or in pairs; blades linear. lanceolate, 5—12 cm. long, 3—4 mm. wide, narrowly cuneate at the base, acute with a curved mucro at the tip, with 3—5 projecting veins below. Lower leaves with petioles 2—5 cm. long, the upper very narrow and not obviously petiolate. *Umbels* 3-rayed, the rays very slender, 0·7—1·5 cm. long. *Petals* glabrous, reddish. *Fruit* rounded, 2—3 mm. diam. much longer than the acute bracts. *Mericarps* slightly swollen with a distinct commissural groove, each with a prominent dorsal and very faint lateral ridges, the furrows slightly wrinkled.

Apparently rare and confined to swamps and streamsides in the coastal belt between Port Elizabeth and Riversdale. While well characterized by the 4-angled stems, linear leaves with projecting veins, and the small not much flattened fruits, the species has been much confused. Much of the material so named in collections is not this species.

UITENHAGE. Van Stadensberg, *Ecklon* 2183: *Ecklon & Zeyher* 2176 (type): *Zeyher* 105. MOSSEL BAY. Cloete's Pass, *Adamson* 4337, 4343.

22. **C. stipitata** sp. nov.

Glabra vel glabrescens. *Caules* prostrati. *Folia* fasciculata, lineari-

lanceolata, petiolata, coriacea, trinervia. *Umbellae* triradiatae saepissime approximatae, radiis elongatis. *Petala* glabra. *Fructus* orbicularis, distincte stipitatus, apice emarginatus, bracteis multo longior.

A prostrate or sprawling plant in habit much like *C. glabrata*. *Leaves* glabrous or very thinly hairy, petiolate, linear-lanceolate, coriaceous: blades 3—5 cm. long, 2—4 mm. wide, acute, 3-veined: petioles 2—6 cm. long. *Umbels* 3-rayed, usually aggregated, the rays slender, 1—1·5 cm. long, often thinly hairy. *Petals* glabrous. *Fruit* orbicular, 4—5 mm. long and about the same in width, emarginate at the top, on a short thick gynophore 1—2 mm. long. *Bracts* usually glabrous, subacute, about as long as the gynophore.

Mountain slopes in the Zitzikama region.

Allied to *C. glabrata* but with quite different fruit and with much narrower leaves.

UNIONDALE. De Hoek, *Esterhuysen* 16377 (type); Slypsteenberg, *Esterhuysen* 6299; Kamanassie Mts., *Esterhuysen* 16478.

23. **C. Comptonii** sp. nov.

Caules herbacei, ramosissimi, prostrati, subterranei tantum lignosi. *Folia* saepe congesta, ovata, petiolata, ciliata, petiolis hirsutis. *Umbellae* triradiatae aggregatae. *Petala* glabra incurva. *Fructus* ovatus obcordatus, pedicello erecto. *Mericarpia* lateraliter trijuga, vix rugosa. *Bracteae* ciliatae fructu breviores.

In prostrate patches. *Stems* woody below ground, the aerial slender, usually hairy, with many equal branches. *Leaves* clustered, petiolate, blades ovate or elliptical, 3-veined, 1·5—2 cm. long, 3—7 mm. wide, cuneate at the base, acute at the tip, thinly ciliate, not coriaceous: petioles 1—2 cm. long, thinly hairy. *Umbels* often aggregated. *Petals* glabrous, reddish, incurved at the tip. *Fruit* 4—6 mm. long, 3·5—4 mm. wide, flattened, notched at the top, the mericarps with 3 distinct ridges on each face, the furrows almost smooth. *Bracts* acute, ciliate, from half to two-thirds the length of the fruit. Fruit on an erect ray, 0·5—1·25 cm. long.

In habit and leaf like *C. affinis* var. *Richardiana* but quite different in fruit.

KNYSNA. Stony soils on Paardekop near Plettenburg Bay, *Compton* 22668; (*type* in herb. Nat. Bot. Gardens, Kirstenbosch); *Steyn* 706. PORT ELIZABETH. Dunes near Port Elizabeth, *MacOwan* 1118.

24. **C. graminifolia** sp. nov.

Erecta, glabra. *Caules* herbacei. *Folia* linearia, plana, 3-nervia, uperiora sessilia, inferiora in petiolum angustata. *Umbellae* in axillis

foliorum superiorum, saepe aggregatae, triradiatae. *Petala* glabra. *Fructus* oblongus, rugosus, bracteis multo longior. *Radius* fructifer brevis erectus.

A slender erect glabrous herb with ascending branches. *Leaves* clustered, flat, linear, 4—6 cm. long, 2·5—3 mm. wide, 3-veined with the side veins close to the margin, the upper leaves sessile, the lower gradually narrowed to a petiole. *Umbels* at the tips of the branches, with 3 equal rays about 4—5 mm. long. *Petals* glabrous. *Fruit* longer than wide, parallel-sided, 4—5 mm. long, 3 mm. wide, flat-topped, much longer than the bracts. *Mericarps* with distinct ridges and slightly wrinkled furrows. Fruit on an erect ray 0·5—1·5 cm. long.

Readily distinguished by the habit, linear flat leaves, and small oblong fruits.

Rather rare in swamps in the eastern districts.

KNYSNA. Knysna, *Levyns* 7867 (type); Barbier's Kraal, *Fourcade* 1577; Buffelshoek, *Hafstrom*. UNIONDALE. Helpmekaar Mt., *Compton* 5186. UITENHAGE. Van Stadensberg, *MacOwan*. PORT ELIZABETH. Parson's Vlei, *F. R. Long* 831. ALBANY. Grahamstown, *MacOwan* 1063. TRANSKEI. Kei Mouth, *Flanagan* 622; Barijaberg, *Baur* 619; Kagatang, *MacOwan* 1141.

Baur 115 from Baziza Mts., and *MacOwan* from Umgoya, Zululand, probably belong to this species but have wider leaves and larger fruits.

25. **C. scabra** Adamson nom. nov. *C. glabrata* var. *acuminata* Adamson Journ. S. Afr. Bot. 6. 53. 1940.

Herbaceous, sprawling or prostrate, rough, varying from densely clothed with short hairs to almost glabrous. *Stems* woody at the base only, the aerial up to 50 cm. long. *Basal leaves* crowded, almost tufted, the upper scattered, often secund: blades rough, oblong-lanceolate to linear-lanceolate, 2—4 cm. long, 2—8 mm. wide, flat or occasionally rolled, 3-veined, the lateral veins often only visible in the lower half, acute or mucronate at the tip: petioles of the lower leaves as long as the blades, of the upper short. *Umbels* 3-rayed, often in groups, often secund and descending on the lateral branches: rays slender, 1—1·5 cm. long, usually hairy. *Male flowers* with 4 hairy bracts, bisexual with 2. *Petals* densely hairy. *Fruit* 2·5—4 mm. long, 2—3 mm. wide, parallel-sided: mericarps with a distinct dorsal but very faint lateral ridges, the furrows smooth. *Bracts* acuminate, varying from half as long as to a little longer than the fruit. Fruit on a slender curved ray up to 5 cm. long.

Distinguished by the small parallel-sided fruit with acuminate bracts. Though originally described as a variety of *C. glabrata*, the differences in habit, leaves, petals, fruit and bracts are such that no very close affinity is indicated.

Two forms of the species occur though they are connected by intermediates, the one which occurs in the more northern areas has leaves with prominent veins and bracts about as long as the fruit, the other which is more southern in distribution has not projecting veins in the leaves and bracts about half as long as the fruit.

Rocky mountain slopes. Not recorded east of Caledon.

VAN RHYNSDORP. Giftberg, *Salter* 7275. CLANWILLIAM. Graafwater, *Acock* 3063. CERES. Cold Bokkeveld Mts., *Adamson* 1064 (type), 1073, 4280, 4286, 4293. TULBAGH. Roodesandberg, *Adamson* 1019, 1026; *Compton* 6552; *Esterhuysen* 6552; Tulbagh Kloof, *Ecklon* 2178 (*H. fusca*) Tulbagh, *Esterhuysen* 16903. PIKETBERG. Porterville, *Esterhuysen* 18106; 24 Rivers, *Esterhuysen* 16621. WORCESTER. Wabooms River, *Esterhuysen* 8947. PAARL. Seven Sisters, *Esterhuysen* 9040; Witte River Valley, *Adamson* 4392, 4393; Du Toit's Kloof Pass, *Esterhuysen* 15702, 15818; Donker Kloof, *Esterhuysen;* Berg River Valley, *Adamson* 4406. STELLENBOSCH. Jonkershoek, *Adamson* 3999, 4003, 4070, 4080, 4231, 4234, 4236. CAPE. Lion's Head, *Zeyher* (*H. plantaginea*); *Esterhuysen* 15760, 15761; Kirstenbosch, *Esterhuysen* 15451, 15843; Wynberg, *Esterhuysen* 15748, 15847. CALEDON. Houwhoek, *Adamson* 4245; Hawston *Adamson* 4251; Babylon's Tower, *Esterhuysen* 15843. Without exact locality:—*Acock* 4634; *Harvey.*

26. **C. lasiophylla** Adamson sp. nov.

Tota pilis albis mollibus tecta. *Caules* elongati procumbentes ramosi non radicantes. *Folia* saepissime fasciculata petiolata, laminis trinerviis ovatis vel oblongis acutis basi subtruncatis vel late cuneatis. *Petioli* laminis longiores. *Umbellae* triradiatae, radio fructifero vix elongato. *Fructus* ovatus bracteis pilosis acuminatis brevior vel aequilongus.

Covered all over with short soft white almost velvetty hairs. *Stems* elongate, sprawling or prostrate, slender, up to 2 m. long, branched, not rooting at the nodes. *Leaves* petiolate, most often in groups, blades oblong or ovate, 1·5—3 cm. long, 0·8—1·3 cm. wide, acute and often mucronate at the tip, widely cuneate or subtruncate at the base, 3-veined; petioles of the lower leaves 2- or 3-times as long as the blades, not longer than the blades in the upper. *Umbels* 3-rayed, the rays 3—5 mm. long, not extending at the fruiting stage. *Petals* hairy, at least in the middle. *Fruit* 3·5 mm. long, 2—3 mm. wide, parallel-sided, often red-brown, smooth, with very faint ridges. *Bracts* pilose, acuminate, longer than or as long as the fruit.

On sand under bushes in the Cedarberg ranges.

In collections this has been confused with *C. villosa* and with hairy forms of *C. glabrata.*

CLANWILLIAM. Pakhuis Pass, *Adamson* 4261 (type), 4262: Wuppertal, *Bolus* 9011; *Compton* 4748; Krakadouw Poort, *Esterhuysen* 12243; Hex River, *Pearson* 52697; Olifants River, *Esterhuysen* 17931. CERES. Elands Kloof, *Levyns* 4783.

Specimens collected on hills near Brand Vlei, Worcester (*Rehmann* 2378, 5166; *Esterhuysen* 1925) may belong to this species but have more cuneate leaves and rounded fruits longer than the bracts.

27. **C. pottebergensis** Adamson sp. nov.

Glabra. *Caules* suberecti basi lignosi. *Folia* dense fasciculata fasciculis distantibus, plana, linearia, 1-nervia, coriacea. *Umbellae* aggregatae triradiatae. *Petala* glabra. *Fructus* compressus, obcordatus vel orbicularis bracteis acutis longior, jugis parvis valleculis subrugosis.

A suberect or sprawling glabrous plant. *Stems* woody at least at the base. *Leaves* crowded with long internodes between the clusters, strap-shaped or linear-lanceolate, 2—7·5 cm. long, 3—5 mm. wide or rarely 7 mm., leathery, brown, 1-veined, acute or rounded at the tip, narrowed at the base to a petiole 1—2 cm. long. Upper leaves smaller and with shorter petioles. *Umbels* 3-rayed with male and bisexual flowers, with male flowers only, or 1-rayed with a bisexual flower, the different kinds usually on the same plant but some plants with male flowers only. *Rays* 4—5 mm. long. *Petals* glabrous, white. *Fruit* 3·5—4 mm. long and wide, often emarginate at the top, slightly longer than the acute bracts. *Mericarps* with very small ridges and slightly wrinkled furrows. Fruit on an erect ray not over 0·5 cm. long.

Very distinctive in habit.

SWELLENDAM. Potteberg, *Adamson* 4306 (*type*), 4308, 4310, UNIONDALE. Zitzikama Mts., *Esterhuysen* 4771, 16771.

28. **C. sessilis** Adamson sp. nov.

Caules procumbentes basi lignosi. *Folia* numerosa glabra oblanceolata vel anguste oblonga, acuta, uninervia, integra vel raro apice dentata, coriacea vel subcarnosa, basi in petiolum sensim attenuata. *Umbellae* andro-dioicae, masculae 4—6 radiatae floribus ternatis, bracteis acutis ciliatis, fertiles uniflorae radio breve erecto. *Petala* glabra. *Fructus* depresso-rotundatus, compressus, latior quam longus, mercarpiis jugis distinctis curvatis. *Bracteae* fructu paulo breviores.

In small tufts with prostrate stems often buried in the soil but not rooting at the nodes. *Leaves* 2—6 cm. long, 2—4 mm. wide, glabrous oblanceolate or narrow-oblong, 1-veined, acute, entire or occasionally a few with 1 or 2 teeth at the tip, coriaceous or somewhat succulent, often glaucous, gradually narrowed at the base to a short petiole. *Umbels* aggregated, the male and bisexual on separate plants: male with 4—6 rays each with 3 flowers though commonly one is abortive: bisexual flowers solitary on a short erect ray 2—3 mm. long. *Petals* glabrous, large, white. *Fruit* compressed, wider than long, emarginate at the top, 3—4 mm. long, 4—5 mm. wide, dark green, slightly longer than the acute bracts. *Mericarps* with rather prominent curved ridges. Fruit ray short or occasionally elongating to 4—6 mm.

Widely spread in open places on mountains.

Distinguished by the low growing habit, small glabrous 1-veined leaves, many-rayed male flowers, and the fruits on very short rays. The leaves may be as thick as wide.

CLANWILLIAM. Cedarbergen, *Esterhuysen* 7581. CERES. Valsch Gat Kloof, *Esterhuysen* 1576. WORCESTER. Roodeberg, *Compton* 8400; Prospect Peak, *Esterhuysen* 15928; Waaihoek, *Esterhuysen* 18196. RIVERSDALE. Langeberg, *Marloth* 5187. MOSSEL BAY. Robinson Pass, *Adamson* 4350 (type), 4348. UNIONDALE. Outeniqua Mts., *Esterhuysen* 13313; Kouga Peak, *Esterhuysen* 16277.

The following probably belong to this species but are without fruit:—

CERES. Olifants River Mts., *Esterhuysen* 13495. WORCESTER. Matroosberg, *Wilman* 14198. CALEDON. Babylon's Tower, *Esterhuysen* 4997. BREDASDORP. Appelskraal, *Stokoe* 9430. RIVERSDALE. Garcias Pass, *Esterhuysen* 17326; *Thorne*. MOSSEL BAY. Robinson Pass, *Salter* 3265; Gouritz River, *Ecklon & Zeyher* (as *H. montana*). PRINCE ALBERT. Swartberg Pass, *Bolus* 11518. GEORGE. George, *Prior;* Postberg, *Burchell* 5938; Cradockberg, *Galpin* 4090. FORT BEAUFORT. Katberg, *S. M. Young* 15223.

29. **C. fusca** (E. & Z.) Adamson comb. nov. *Hydrocotyle fusca* E. &. Z. Enum. 336. 1837 (emend.).

More or less tufted but often with elongated semierect or sprawling branches. Laxly hirsute all over or glabrescent. *Leaves* linear or oblanceolate, 1—3 cm. long, 2—3 occasionally 5 mm. wide, often rolled, usually much crowded in fascicles, gradually narrowed at the base to a petiole. *Umbels* crowded together, 3-rayed with a bisexual flower or with male flowers only, or 1-rayed with a bisexual flower, the last on separate plants. *Rays* of the male flowers 2—4 mm. long. *Petals* very hairy. *Fruit* about 4 mm. long, and about as wide, not compressed, 2—4 mm. thick, obtusely conical or rounded, usually emarginate at the tip, wrinkled or dotted but with very faint ridges. *Bracts* 4, linear, about as long as the fruit but not appressed to it. Fruit on an erect or spreading ray 0·4—1·5 cm. long.

Distinguished from all other species by the conical not compressed fruit with long linear bracts. Very variable in the degree of hairiness and in the width of the leaves: plants from dry situations have apparently terete tightly rolled leaves.

The specimens of the type number (*Ecklon & Zeyher* 2178) are poor and incomplete but do represent this species. The original description is incorrect about the number of rays in the umbel.

VAN RHYNSDORP. Giftberg, *E. P. Phillips*. CLANWILLIAM. Pakhuis Pass, *Adamson* 4263; *Esterhuysen* 3418; *Levyns* 9447; Cedarberg, *Esterhuysen* 18015, 18046, 18159; Algeria, *Esterhuysen* 18175; *Salter* 7578 ♂; *Lewis* 22220 ♂; Olifants River, *Esterhuysen* 17876. CERES. Cold Bokkeveld Mts., *Adamson* 1072A, 4115, 4120, 4123, 4267, 4268, 4282, 4285; Schurfteberg, *Esterhuysen* 17380; Ceres Peak, *Esterhuysen* 17530. TULBAGH. Tulbagh Kloof, *Ecklon & Zeyher* 2178 (*type*). PIKETBERG. Piketberg, *Compton* 3634; Porterville, *Esterhuysen* 16139. WORCESTER. Hex River Mts., *Esterhuysen* 15931.

30. **C. didymocarpa** Adamson sp. nov.

Subcaespitosa, glabra vel glabrescens. *Caules* lignosi ramis brevibus decumbentibus congestis. *Folia* numerosa lanceolata petiolata uninervia integra vel rarissime apice dentata. *Umbellae* triradiatae foliis multo breviores. *Petala* glabra. *Fructus* didymus, basi abrupte angustata, bracteis duplo longior, mercarpiis subsphaericis reticulatis.

Almost glabrous. In low tufts. *Leaves* crowded, petiolate: blades lanceolate, 1-veined, 1·5—2 cm. long, 3—5 mm. wide, entire or a few with 1—3 teeth near the tip, gradually narrowed at the base: petiole as long as the blade in the lower leaves, shorter in the upper. *Umbels* 3-rayed, among the leaves. *Petals* glabrous. *Fruit* on a short straight ray, broader than long, 4—4·5 mm. wide, 3 mm. long, the mericarps almost spherical with a depressed commissure, the ridges small, the furrows reticulate. *Bracts* about half as long as the fruit.

Distinguished from all other species by the fruit.

UNIONDALE. Mts. near Joubertina, *Esterhuysen* 16754 (*type*).

31. **C. rupestris** (E. & Z.) Adamson Journ. S. Afr. Bot. 15. 95. 1950. *Hydrocotyle rupestris* E. & Z. Enum. 334. 1837. *H. arbuscula* Schlechter Bot. Jahrb. 27. 172. 1890. *C. arbuscula* Domin Bot. Jahrb. 41. 168. 1908.

An erect woody shrublet, 12—25 cm. high, with few ascending branches. *Stems* bare below, leafy above. *Leaves* crowded, oblanceolate, 2—6 cm. long, 0·3—0·8 cm. wide, acute and usually mucronate at the tip, gradually narrowed from near the tip to the base but not obviously petiolate, leathery, often revolute, glabrous except for curled hairs on the edge of the sheath. *Umbels* axillary, or on short lateral branches, 3-rayed, some with male flowers only. *Rays* of the male flowers 4—5 mm. long, of the bisexual 2—3 mm. *Male flowers* with 4 acuminate bracts, bisexual with 2. *Bracts* ciliate, those of the bisexual flowers 5—6 mm. long and about 2—3 mm. wide at the base, enclosing the flower. *Fruit* rounded, about 4 mm. long and wide, flat-topped, rather thick, shorter than but as wide as or wider than the bracts. *Mericarps* with very thin curved ridges and wide slightly wrinkled furrows.

Endemic and rare in damp situations at low altitudes in the Caledon division.

A very distinctive species not closely related to any other. It is retained in the series *Glabratae* for convenience but might well be placed in a separate series. *C. arbuscula* has no distinguishing features.

CALEDON. Klein River, *Zeyher; Zeyher* 2667 (type); *Ecklon & Zeyher* 2170; Bot River, *Schlechter* 9444 (*H. arbuscula*); *Middlemann.*

Series 6. **Virgatae.**

Caules erecti vel procumbentes, basi lignosi. *Folia* teretia, semiteretia vel linearia, saepe fasciculata, nervis obscuris. *Umbellae* saepe aggregatae, andro-monoicae vel andro-dioicae.

Separated from series *Glabratae* on the features of the leaf.

KEY TO THE SPECIES.

- 1. Leaves or some of them flat or revolute.
  - 2. Erect woody plants with forked branching: fruit longer than the bracts .. .. 33. *linifolia*
  - *2.* Diffuse herbs, woody at the base only.
    - 3. Fruit rounded, shorter than the bracts .. .. 37. *restioides*
    - *3.* Fruit oblong, longer than the bracts .. .. .. 36. *recticarpa*
- *1.* Leaves terete, usually grooved.
  - 4. Densely tufted: fruit ray swollen at the top; fruit wider than long .. .. 38. *caespitosa*
  - *4.* Not tufted; shoots elongated: fruit ray not swollen at the top.
    - 5. Fruit ray elongated, 1 cm. or more long.
      - 6. Fruit ray slender: fruit longer than the bracts.
        - 7. Diffuse: leaves firm: fruit 3·5—4 mm. long, usually longer than wide .. .. .. 32. *virgata*
        - *7.* Prostrate: leaves very slender: fruit not over 3 mm. long, wider than long .. .. 34. *stenophylla*
      - *6.* Fruit ray stout: fruit 4—5 mm. diam., shorter than the bracts .. .. 37. *restioides*
    - *5.* Fruit ray short, not over 0·5 cm. long.
      - 8. Fruit rounded, as wide as long, with prominent ridges .. .. 37. *restioides*
      - *8.* Fruit oblong, longer than wide.
        - 9. Fruit wedge-shaped, narrowed to the base, the ridges faint .. .. 32. *virgata* var. *congesta*
        - *9.* Fruit parallel-sided, with a prominent stylopodium: ridges prominent .. .. .. 36. *recticarpa*

32. **C. virgata** (L.f.) Drude in Engler & Prantl Nat. Pflanzf. 3.8. 120.

1898. *Hydrocotyle virgata* L.f. Supp. Pl. 176. 1781. *H. lanuginosa* E. & Z. Enum. 337. 1837 (p. pte.). *H. filicaulis* E. & Z. l.c. 338. *H. trichophylla* E. & Z. l.c. 338. (p. pte.).

Stems many from the root, erect, sprawling or semiprocumbent, woody at the base only, branched especially at the base, up to 80 cm. long, glabrous or hairy. *Leaves* terete with a small groove, stout or slender, the lower crowded, up to 15 cm. long, the upper shorter, scattered or in groups of 2 or 3. *Sheaths* with a narrow membranous edge, usually woolly inside. *Umbels* in the upper axils, solitary or in groups, 3-, 4- or 6-rayed, the rays slender, 0·5—1·5 cm. long, often hairy. *Umbels* usually all alike or the uppermost with male flowers only. *Petals* glabrous, white or brownish, often large. *Fruit* flattened, usually longer than wide, 3·5—4·5 mm. long, 3—4 mm. wide, flat-topped or indented, at least twice as long as the bracts. *Mericarps* with faint or slightly prominent almost straight ridges and smooth or slightly wrinkled furrows. *Bracts* acute or acuminate. Fruit ray up to 2·5 cm. long, usually straight and ascending.

Often brown in colour. Very variable in size, hairiness, and in the numbers of leaves. A stout form with large white petals, smooth fruits with faint ridges and acuminate bracts, may be a distinct variety. It is found in the Caledon Division.

Frequent on bushy mountain slopes along the south coast. Absent from the exposed upper parts of the mountains.

PIKETBERG. Porterville, *Edwards* 16149; *Esterhuysen* 16116. TULBAGH. Winterhoek, *Bolus* 5057; Waterfall, *Ecklon & Zeyher* 2185 (*H. trichophylla*). CERES. Castle Rocks, *Thode* A.2245. WORCESTER. Du Toit's Kloof, *Esterhuysen* 15676; Bain's Kloof, *Compton* 18626. CALEDON. Genadendal, *Pappe;* Houwhoek, *Adamson* 4424; *Zeyher* 2668; Paardeberg, *Adamson* 4181, 4200, 4208, 4378; Palmiet River, *Compton* 14102; *Levyns* 3843; *Stokoe* 8808, 8992; Kleinmond, *Marloth* 14105. BREDASDORP. Bredasdorp, *Galpin.* ROBERTSON. McGregor, *Adamson* 4449. SWELLENDAM. Swellendam, *O. Kuntze;* Grootvadersbosch, *Adamson* 3796, 3800, 3800A; *Esterhuysen* 10507. RIVERSDALE. Garcia's Pass, *C. A. Smith* 2468; Aasvogelberg, *Muir* 891; Tradouwberg, *Bowie.* MOSSEL BAY. Cloete's Pass, *Zinn*; Robinson Pass, *Adamson* 4346, 4347. GEORGE. Montagu Pass, *Compton* 7577; *Hutchinson* 1223; Outeniqua Mts., *Prior;* Hoogekraal, *Hutchinson* 1300; Barbier's Kraal, *Fourcade* 1577. LADISMITH. Seven Weeks Poort, *Andreae* 1312; *Compton* 4236; *Levyns* 2453; Swartberg, *Esterhuysen* 13944. PRINCE ALBERT. Swartberg Pass, *Barker* 5456; *Bolus* 10519; *Pocock* S.117; *Stokoe* 8809, 9056; *Wall.* KNYSNA. Homtini Pass, *Galpin* 4087; *Gillett* 4545; Concordia, *J. D. Keet* 573, 2877; The Glebe, *Galpin* 4088; Gouna Road, *Levyns* 7850; Lange Valle, *Burchell* 5702; Portland, *Rehmann* 372;

Paardekop, *Burchell* 5162; Kayman's Gat, *Burchell* 5798; Swart Riv., *Fourcade* 1577; Eiland Kop, *J. Phillips* 27. UNIONDALE. Avontuur, *Fries, Norlindh & Weimarck* 1645; Joubertina, *Esterhuysen* 10618; Mannetjesberg, *Esterhuysen* 4708; Zitzikama Mts., *Esterhuysen* 10636. HUMANSDORP. Coldstream, *Galpin* 9587; Riet Vlei, *Esterhuysen* 6614; Kouga Hills, *Esterhuysen* 6662; Loerie Plantn. *Dix* 16; Zuur Anysberg, *Fourcade;* Witelsbosch, *Fourcade* 291; Clarkson, *Thode* A.847. PORT ELIZABETH. Port Elizabeth, *Fries, Norlindh & Weimarck* 1148. UITENHAGE. Van Staden's Riv., *Ecklon & Zeyher* 2183; *F. R. Long* 252, 667; *Paterson* 1920; *Schlechter* 6071; *G. C. Theron* 654; Vanstadensberg, *Drege* 7621a; *MacOwan* 1063; Uitenhage, *Zeyher* 18; Swartkops Riv., *Zeyher* 2668; Melkhoutstroom, *R. Story* 2615; Otterford, *Rodin* 1117; Witteklip, *Holland* 3585; Springfield, *Paterson* 1920; Addo, *Ecklon & Zeyher;* Stones Hill, *Schonland* 197. ALEXANDRIA. Zuurberg, *Drege* 7620; *Rennie* 457. ALBANY. Grahamstown, *F. A. Rogers* 27663; *MacOwan* 1063; Highlands, *Dyer* 2226; Thescomb, *Paterson* 1920; Collingham, *L. Britten* 1966, 5100; Hofman's Bush, *L. Britten* 1018. Without exact locality:—*Ecklon & Zeyher* (*H. filicaulis*); *Ecklon & Zeyher* 2184; *Masson; Prior; Thunberg; Zeyher.*

var. **gracilescens** Domin Fedde Repert. 4. 300. 1907.

Low growing. *Stems* woody, much branched, short. *Leaves* crowded, very slender, 2—3 cm. long. *Umbels* crowded, partly dioecious: rays at flowering time 3—4 mm. long, but the fruiting finally 1—1·5 cm. long, often curved or deflexed. *Fruit* 3·5—4 mm. long, 3—3·5 mm. wide, almost smooth, much longer than the bracts.

Rocky slopes in the western and northern districts. Very distinctive in habit. Specimens have often been named *H. filicaulis* or *H. trichophylla.* NAMAQUALAND. Riet Kloof Mts., *Pearson* 5723. CLANWILLIAM. Pakhuis Pass, *Esterhuysen* 3419. CERES. Cold Bokkeveld Mts., *Adamson* 1072, 1070; Gydoberg, *Adamson* 3721A; Gideonkop, *Esterhuysen* 13878?; Slab Peak, *Esterhuysen* 6172. TULBAGH. Roodesandberg, *Adamson* 1018. WORCESTER. Fonteintjesberg, *Esterhuysen* 10953. CAPE. Karbonkelberg, *Adamson* 1206. Without exact locality:—*Harvey* 630.

var. **congesta** Adamson var. nov.

A typo differt:—foliis superioribus tenerrimis congestis, umbellis aggregatis, radiis plus minusve dense pilosis, fructibus oblongis bracteis triplo longioribus in radiis perbrevibus positis.

Like *C. virgata* but with crowded very slender leaves 1—2·5 cm. long at the tips of the stems. *Umbels* crowded, the rays usually densely hairy. *Fruit* 4 mm. long, oblong, parallel-sided, not over 3 mm. wide, three times as long as the bracts, on a ray 3—5 mm. long. Either hairy or glabrous except for the leaf axils and umbels:

SWELLENDAM. Tradouw Pass, *Acock* 2218; *Adamson* 3773 (type); 4021; *Drege* 7626; *Levyns* 590; *Marloth* 12170, 12171; *Salter* 6316; *Stokoe*, Swellendam, *Acock* 15440; Grootvadersbosch, *Esterhuysen* 10389; RIVERSDALE. Garcia's Pass, *Adamson* 4367, 4373; *E. P. Phillips* 350. *C. A. Smith* 2768; Hermanshoek, *Muir* 395; Aasvogelberg, *Muir* 891; Langeberg, *Schlechter* 1735. MOSSEL BAY. Cloete's Pass, *Stokoe*. GEORGE. George, *Prior;* Montagu Pass, *Hutchinson* 1223. UNIONDALE. Lauterwater, *Esterhuysen* 4622. Without exact locality:—*Ecklon* 2182.

E. P. Phillips 9180 from Seven Weeks Poort is probably this variety but is without fruit.

33. **C. linifolia** (L.f.) Drude in Engler & Prantl Nat. Pflanzf. 3. 8. 120; 1898 (quoted as "*linifolia* (Thunb.)". *Hydrocotyle linifolia* L.f. Supp. Pl. 176. 1781. *C. glabrata* var. *linifolia* f. *rigescens* Domin Bot. Jahrb. 41. 168. *H. Centella* var. *linifolia* s-vars. *rigida* & *verticillata* 1908. Sond. Fl. Cap. 2. 532. 1862.

Rigid erect woody plant, up to 50 cm. high, with fork-like branches. Glabrous, glabrescent or pubescent, often glaucous. *Leaves* clustered, rigid, 2—5 cm. long, the basal up to 8 cm., linear, 1—4 mm. wide, flat, revolute or the upper terete, often rough. *Umbels* usually dioecious, male 3—6-rayed, with rays 4—6 mm. long, each with 2 or 3 flowers: bisexual flowers solitary on a ray 2—5 mm. long. *Umbels* with both male and bisexual flowers may occur on plants with otherwise male flowers. Petals glabrous, white or pink. *Fruit* rounded or slightly longer than wide, 2·5—5 mm. diam., dark green, the mericarps with distinct curved ridges and much wrinkled furrows. *Bracts* acute or acuminate, much longer than the flowers, shorter than the fruit. Fruit ray erect or spreading, 0·5—1 cm. long.

Variable in leaf and in hairiness. Allied to and often confused with *C. virgata*. Distinguished by the rigid habit, flat leaves, unisexual umbels, and larger fruits with more prominent ridges. In the absence of flowers the species are not always separable.

There has been a good deal of confusion in the application of the name *linifolia*. It has been used for *C. affinis* and other narrow-leaved plants. The original description is not satisfactory and gives only features of little importance. There is however no doubt about the original specimens in Thunberg's collection.

Dry rocky mountain slopes. Especially abundant on mountains at the margins of the karroo area.

NAMAQUALAND. Groenrivier, *Drege* 7622a. VAN RHYNSDORP. Giftberg, *Drege* 7622; *E. P. Phillips* 7612. CLANWILLIAM. Cedarberg, *Bolus* 9012; *Ecklon & Zeyher* 2180; *Zeyher* 727 (type of *H. rigescens*); Ezelbank, *Drege* 7624a; Wupperthal, *Drege* 7623; Wolfberg, *Esterhuysen* 18099; Tafelberg, *Esterhuysen* 18167. Olifants River, *Stephens* 6860, 7121. PIKETBERG. 24 Rivers, *Zeyher*. CERES. Witzenberg, *Andreae* 187 (♂). TULBAGH. Winterhoek, *E. P. Phillips* 11209; Roodesandberg, *Adamson* 1031; *Levyns* 5716. WORCESTER. Krom River Peak, *Esterhuysen* 9401 (♂). PAARL. Haalhoek Sneeuwkop, *Esterhuysen* 13520 (♂). ROBERTSON. Sondereinde Mts., *Levyns* 5454, 9202. MONTAGU. Baden, *Compton* 18435. LADISMITH. Ladismith, *Levyns* 4438, 9116; Touwsberg, *Levyns* 7469, 9096; Roodeberg, *Adamson* 3690; *Levyns* 6094. MOSSEL BAY. Gouritz River, *Ecklon & Zeyher* 2182 (*H. lanuginosa*). ALEXANDRIA. Zuurberg, *Drege* 7620. Without exact locality:—*Ecklon* 218 (*H. lanuginosa*), 2179; *Zeyher* 742 (♂).

The specimens collected by Drege and given the M.S. name *H. linearis* by Meyer appear to be a form of this species with very short leaves.

var. **depressa** Adamson var. nov.

Humilis, depressa. *Folia* congesta, plana, linearia, brevia, scaberrima. *Fructus* in radio elongato positus.

A low-growing almost tufted woody plant. *Leaves* crowded, flat, not over 2 cm. long, very rough. *Fruit* on a long slender ray 1—2 cm. long.

CERES. Olifants River Mts., *Esterhuysen* 13496. WORCESTER. Bonteberg, *Esterhuysen* 3708, 3741. LAINGSBURG. Witteberg, *Adamson* (s.n.) (type); *Compton* 2540, 2963, 3564, 13968.

34. **C. stenophylla** Adamson sp. nov.

Caules tenuissimi prostrati ramosissimi ramis intricatis. *Folia* filiformia saepissime glabra, marginibus vaginarum non-scariosis. *Umbellae* triradiatae, floribus parvis. *Fructus* orbicularis, parvus, bracteis multo longior, jugis prominentibus, valleculis rugosis. *Radius* fructifer tenuis elongatus.

A low-growing much branched herb forming patches or tangles. Usually glabrous except for a few hairs in the leaf axils. *Stems* very slender, up to 40 cm. long, the branches with long internodes. *Leaves* thread-like, soft, dark green, 2—6 cm. long, the sheaths small, brown, with no membranous margin. *Umbels* 3-rayed, often grouped: rays slender, glabrous: flowers very small. *Petals* glabrous. *Fruit* rounded, as wide as long or slightly wider, 2·5—3·5 mm. long, 3—3·5 mm. wide, much longer than the minute membrane-edged bracts. *Mericarps* with rather prominent ridges and wrinkled furrows. Fruit on a very slender ray about 1 cm. long.

Distinguished by the habit, very slender leaves and very small rounded fruits. Apparently confined to rocks on mountains in the Swellendam region.

SWELLENDAM. Swellendam Mts., *Esterhuysen* 4811; Potteberg, *Adamson* 3779, 4302 (type), 4304: Tradouw Pass, *Barnard*; Langeberg above Heidelberg, *Esterhuysen* 18269.

35. **C. macrocarpa** (Rich.) Adamson Journ. S. Afr. Bot. 6. 54. 1940. *H. macrocarpa* Rich. Monog. Hydroc. 80. t.67 f.40. 1820. *H. virgata* var. *macrocarpa* DC. Prodr. 4. 69. 1830. *C. virgata* var. *macrocarpa* Domin Bot. Jahrb. 41. 167. 1908. *H. alpina* E. & Z. enum. 334. 1837.

Erect or semierect, often in bunches, with many ascending branches from the woody base. Glabrous or less commonly hairy. *Stems* only persistent at the base. *Leaves* terete, grooved, usually in groups, 4—10 cm. long, all alike, the upper shorter but not more slender. *Sheaths* hairy, without a membranous edge. Plants of three kinds: with male and bisexual flowers in the umbel, with male flowers only, and with bisexual flowers only. *Umbels* with male flowers 3—6 rayed, most commonly 4 or 6, but umbels with bisexual flowers only 1-rayed. *Rays* 3—8 mm. long, much longer than the acuminate involucre. Male flowers in groups of three though 1 or 2 usually abortive, bisexual flowers solitary. *Petals* glabrous, often reddish, with a narrow translucent margin. *Fruit* rounded in outline, 5—6 mm. long, 4·5—5·5 mm. wide, green or purple, with prominent curved ridges and very slightly wrinkled furrows. *Bracts* acuminate, usually hairy, as long as or half the length of the fruit. Fruit ray short, 3—5 mm., stout, shorter than the rays with male flowers.

Rather variable in size, form, and hairiness. The plants described as *H. alpina* are merely rather slender forms of this species.

Heathy soils on flats and mountains throughout the coastal belt but most common in the south-west.

PIKETBERG. Porterville, *Edwards* 16149 (♂). TULBAGH. Winterhoek, *Ecklon* 2181; *Marloth* 1638. WORCESTER. Orchard, *Esterhuysen* 10882; Worcester, *Ecklon & Zeyher* 1.1; Onklaarberg, *Stokoe* 11686; Du Toit's Kloof, *Drege* 1839; Tyson 915. PAARL. Wemmershoek, *Andreae* 734; Du Toit's Kloof Pass, *Adamson* 4332. STELLENBOSCH. Hottentots Holland, *Ecklon & Zeyher* 2181; *Bowie; Prior;* Sir Lowry's Pass, *Adamson* 4041, 4156; *Leighton* 827; *Guthrie & Page; Parker* 4268; Gordon's Bay, *Marloth* 10006. CAPE. Doornhoogte, *Ecklon & Zeyher;* Table Mt., *Drege* (*H. alpina*); *Ecklon & Zeyher* 2171 (*H. alpina*); *Mundt; Pappe; Prior; Zeyher* 4901; Lion's Head, *Ecklon* 7; Camps Bay, *Adamson* 697; *Barker* 536; *Esterhuysen* 12840; *Hafstrom;* Chapman's Peak, *Adamson* 2252A; Mowbray, *Guthrie* 359; Camp Ground, *Salter* 8953; *F. M. Isaac;*

Wallich; Newlands, *Burchell* 464; Kenilworth, *Adamson* 579, 1197; Wynberg, *Ecklon; E. Kensit;* Constantia Nek, *Salter* 1172; Vlaggenberg, *Schlechter* 222; Constantiaberg, *Wolley-Dod* 655; Diep River, *Marloth* 7305; Muizenberg, *Prior;* Simonstown, *Adamson* 2343; *Wright;* Klaver Valley, *Adamson* 1335, 1340, 1347; *Wolley-Dod* 1982, 2081. CALEDON. Steenbras, *Adamson* 4327, 4328, 4329; *Parker* 4017; Koel Bay, *Adamson* 4027, 4029; Sir Lowry's Pass, *Acock* 2572; *Hafstrom; Salter* 1830; Hangklip, *Compton* 17587; Palmiet River, *Esterhuysen* 12609; Paardeberg, *Stokoe;* Bot River, *Adamson* 4230; Houwhoek, *Adamson* 4248; *Bowie; Zeyher* 2668; Caledon, *O. Kuntze;* Genadendal, *Pappe; Zeyher;* Arieskraal, *Compton* 16486; River Sondereinde, *Burchell* 7563; *Leipoldt* 16236. BREDASDORP. Bredasdorp, *Galpin* 11326; Elands Kloof Mts., *Adamson* 4323. ROBERTSON. Boesmanskloof Pass, *Esterhuysen* 4483. SWELLENDAM. Swellendam, *Mundt;* Zuurbraak, *Thode* A2329. LADISMITH. Seven Weeks Poort, *Stokoe* 1943. RIVERSDALE. Langeberg, *Schlechter* 1735. PRINCE ALBERT. Swartberg, *Adamson* 4355, 4358, 4362; *Esterhuysen* 4530; *Stokoe* 9059. HUMANSDORP. Witelsbosch, *Fourcade* 792. Without exact locality:—*Harvey* 623, 628, 631, 636; *Masson; Wallich.*

var. **saxatilis** Adamson var. nov.

A typo differt:—caulibus lignosis, foliis brevibus, subrigidis pungentibus, umbellis foliis muto brevioribus, fructibus minoribus bracteis triplo longioribus.

A diffuse woody plant. *Leaves* short, 2—4 cm. long, grouped, rather rigid, pungent; sheaths membrane-edged. *Umbels* all alike: rays 5—6 mm. long. *Fruit* 4 mm. diam., much longer than the bracts, on a short ray, about 3 mm.

Rocky places on dry mountain slopes.

RIVERSDALE. N. entrance to Garcia's Pass, *Adamson* 4368 (type). CERES. Gydoberg, *Adamson* 3721.

36. **C. recticarpa** Adamson sp. nov.

C. macrocarpae affinis sed differt caulibus tenuibus brevioribus ex base lignoso, foliis brevioribus apice complanatis, umbellis omnibus simillibus, fructibus oblongis jugis rectis prominentibus, apice stylopodio biconico coronatis.

In erect bunches 15—20 cm. high, from a stout prostrate woody stem, up to 8 mm. diam. *Leaves* slender terete but often flattened at the tip, glabrous, the lower 3—5 cm. long, the upper shorter. *Umbels* all alike, 3- or 4-rayed: rays with male flowers 1—1·5 cm. long, that with the fruit 2—4 mm. long. *Male flowers* in groups of 2 or 3. *Petals* glabrous, red or purplish. *Fruit* brown or purple, oblong, parallel-sided, about 4 mm. long and 2·5 mm. wide, the stylopodium forming two purple cones almost 1 mm. high: mericarps with prominent straight ridges. *Bracts* acuminate, partly scarious, not over half the length of the fruit.

CLANWILLIAM. Cedarberg, Pienaar's Vlakte, Driehoek, *Esterhuysen* 18093 (*type*).

Much smaller than *C. macrocarpa* and quite different in fruit.

37. **C. restioides** Adamson sp. nov.

Caules ramosissimi, basi tantum lignosi, primo villosi sed glabrescentes. *Folia* subrigida plana vel saepissime revoluta, linearia; vaginis latis tandem castaneis, intus villosis. *Flores* andro-dioici, masculi in umbellis triradiatis villosis, fertiles solitarii. *Fructus* orbicularis bracteis acuminatis brevior, jugis prominentibus, valleculis rugosis, pedunculo subrigido breve vel saepe elongato.

Diffuse in tufts or bunches. *Stems* erect or occasionally prostrate with erect branches, woody at the base, much branched, the young parts hairy but the older glabrescent. *Leaves* usually grouped, up to 10 cm. long, very narrow, 1—4 mm. wide, flat, linear-spathulate, very often revolute and apparently terete; sheaths 3—5 mm. long, green at first but soon brown, ciliate, hairy inside, with obtuse auricles at the top. *Flowers* dioecious, male umbels and those with bisexual flowers on separate plants. *Male umbels* 3-rayed, the rays 4—7 mm. long, densely villous: flowers in groups of three, with 4 acuminate bracts. *Bisexual flowers* solitary, usually with 2 bracts. *Petals* densely hairy. *Fruit* rounded, 4—5 mm. diam., usually emarginate at the top, shorter than the acuminate bracts. *Mericarps* with prominent curved ridges and furrows wrinkled or pitted. *Fruit* on a stout ray 0·4—1·2 cm. long.

On heathy soils along with Restionaceae and looking superficially like them. Most abundant on the mountains between Bain's Kloof and Du Toit's Kloof.

PAARL. Bain's Kloof, *Adamson* 4384, 4394; *Gillett* 801; Witte River, *Adamson* 4239 (type ♂), 4240 (type ♀), 4238, 4240, 4241, 4381; *Esterhuysen* 12471; Du Toit's Kloof Pass, *Esterhuysen* 12340; Franschhoek Pass, *Compton* 8157 (♂); *Esterhuysen* 2818. WORCESTER. Baviaan's Kloof, *Adamson* 4386; *Leighton* 2163; Witteberg, *Esterhuysen* 16519; Prospect Peak, *Esterhuysen* 15930; Du Toit's Kloof, *Drege* (*H. virgata* L.f.b.). CERES. Ceres Peak, *Esterhuysen* 17531. CLANWILLIAM. Cedarberg, *Esterhuysen* 7464. ROBERTSON. Sondereinde Mts., *Adamson* 4433, 4435.

38. **C. caespitosa** Adamson sp. nov.

Compacta, caespitosa. *Caules* lignosi ramis numerosis brevibus.

Folia congesta erect teretia glabra vel sparse pilosa. *Umbellae* foliis multo breviores. *Fructus* complanatus, obcordatus apice emarginatus, in pedicello erecto vel reflexo apice incrassato positus, bracteis multo longior. *Mericarpia* pallida laevia sed in sicco intense rugosa, facillime separata.

In dense hemispherical clumps or tufts up to 50 cm. across. *Stems* woody, much branched, the main branches very short. *Leaves* crowded, erect, terete, subpungent, glabrous or thinly hairy, 2—5 cm. long. *Umbels* hidden among the leaves. *Fruit* 3—4 mm. long, 4—6 mm. wide, flattened, pale-coloured, rather deeply emarginate at the top, slightly narrowed at the base and very shortly stipitate. *Mericarps* separating very easily, smooth when fresh but when dry with conspicuous curved ridges and deeply wrinkled furrows. *Fruit* much longer than the bracts, on an erect or reflexed ray about 1 cm. long and distinctly swollen in the upper part.

Among rocks on the upper parts of mountains in the extreme south-west. Very easily overlooked owing to the hidden flowers.

CAPE. Table Mt., *Garside* 6284 (type); *Adamson* 4389; *Esterhuysen* 16804, 16940, 16945. STELLENBOSCH. Jonkershoek Plateau, *Esterhuysen* 15241; Hottentots Holland, *Esterhuysen* 16725.

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ZEYHER. 1 *glabrata;* 4 *tridentata;* 7 *macrocarpa;* 18 *virgata;* 105 *debilis;* 129 *coriacea;* 727 *linifolia;* 742 *linifolia;* 776 *virgata;* 2158 *calliodus;* 2658 *affinis;* 2661 *lanata;* 2662 *flexuosa;* 2663 *calliodus;* 2664 *triloba;* 2666 *difformis;* 2667 *rupestris;* 2668 *virgata;* 4732 *capensis;* 4901 *macrocarpa.*